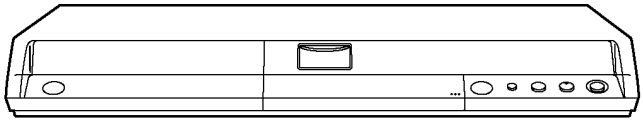
ORDER NO.CHM0605031CE

Service Manual

DVD Recorder



DMR-EH65EE
DMR-EH65GC
DMR-EH65GCS
DMR-EH65GN

Vol. 1

Colour

(S).....Silver Type

Notes: This model's RAM/Digital P.C.B. Module are - RFKNEH65EE(EE)
- RFKNEH65GC(GC)
- RFKNEH65GCS(GCS)
- RFKNEH65GN(GN).

When replacing Main P.C.B. or EEPROM, "UNFORMAT" indication is displayed and HDD must be formatted.

When replacing HDD, it is necessary to update the firmware.
Please prepare the update disc.
(After that, FORMAT is necessary)

After that, programme in the HDD will be lost.
In detail, please refer to each content in this service manual.

Caution:
Pairing of RAM Drive and Digital P.C.B. as "RAM/ Digital P.C.B. Module" have to be replaced together. If the pairing is changed, RAM Drive unit has to be re-aligned. Because the alignment data for RAM Drive Unit is stored in Digital P.C.B..

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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1 Safety Precaution

1.1. General guidelines

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

1.1.1. Leakage current cold check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1MΩ and 5.2MΩ.

   When the exposed metal does not have a return path to the chassis, the reading must be ∞.

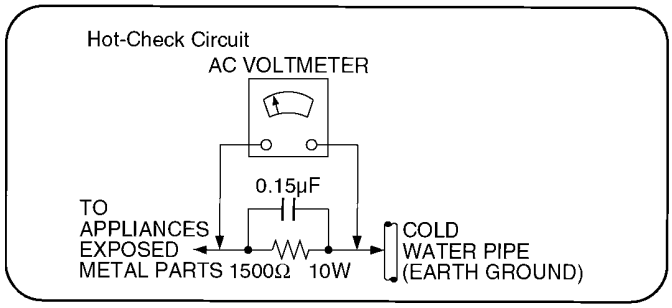


Figure 1

1.1.2. Leakage current hot check (See Figure 1 .)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 1.5kΩ, 10 watts resistor, in parallel with a 0.15µF capacitors, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliampere. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

2 Warning

2.1. Prevention of Electrostatic Discharge (ESD) to Electrostatic Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatic Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistor-sand semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

   Caution

   Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise hamless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device).

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are imporant for safety.
These parts are marked by ⚠ in the schematic diagrams, Exploded Views and replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

2.2. Precaution of Laser Diode

CAUTION:

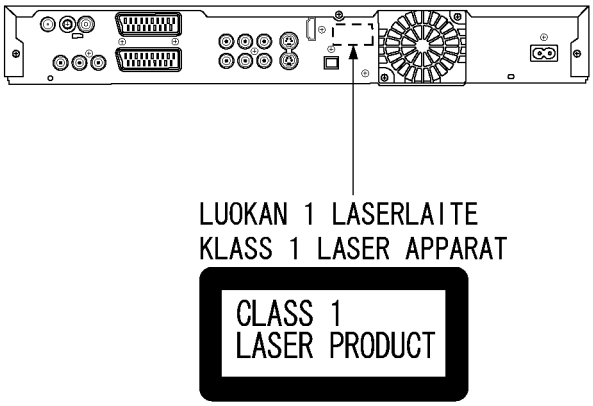
This product utilizes a laser diode with the unit turned “on”, invisible laser radiation is emitted from the pickup lens.
Wave length: 662 nm (DVDs)/780 nm (CDs)
Maximum output radiation power from pickup: 100 μ W/VDE
Laser radiation from the pickup lens is safety level,but be sure the followings:

1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.

ACHTUNG:

Dieses Produkt enthält eine Laserdiode.
Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Laserinheit abgestrahlt.
Wellenlänge: 662 nm (DVDs)/780 nm (CDs)
Maximale Strahlungsleistung der Lasereinheit: 100 μ W/VDE
Die Strahlung der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinheit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlinse blicken.
4. Nicht über längere Zeit in die Fokussierlinse blicken.



CAUTION!
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

2.3. Service caution based on legal restrictions

2.3.1. General description about Lead Free Solder (PbF)

The lead free solder has been used in the mounting process of all electrical components on the printed circuit boards used for this equipment in considering the globally environmental conservation.

The normal solder is the alloy of tin (Sn) and lead (Pb). On the other hand, the lead free solder is the alloy mainly consists of tin (Sn), silver (Ag) and Copper (Cu), and the melting point of the lead free solder is higher approx.30 degrees C (86°F) more than that of the normal solder.

Definition of PCB Lead Free Solder being used

The letter of “PbF” is printed either foil side or components side on the PCB using the lead free solder. (See right figure)	PbF

Service caution for repair work using Lead Free Solder (PbF)

- The lead free solder has to be used when repairing the equipment for which the lead free solder is used.

  (Definition: The letter of “PbF” is printed on the PCB using the lead free solder.)
- To put lead free solder, it should be well molten and mixed with the original lead free solder.
- Remove the remaining lead free solder on the PCB cleanly for soldering of the new IC.
- Since the melting point of the lead free solder is higher than that of the normal lead solder, it takes the longer time to melt the lead free solder.
- Use the soldering iron (more than 70W) equipped with the temperature control after setting the temperature at 350±30 degrees C (662±86°F).

Recommended Lead Free Solder (Service Parts Route.)

- The following 3 types of lead free solder are available through the service parts route.

  RFKZ03D01K----------(0.3mm 100g Reel)

  RFKZ06D01K----------(0.6mm 100g Reel)

  RFKZ10D01K----------(1.0mm 100g Reel)

Note

* Ingredient: tin (Sn), 96.5%, silver (Ag) 3.0%, Copper (Cu) 0.5%, Cobalt (Co) / Germanium (Ge) 0.1 to 0.3%

3 Service Navigation

3.1. Service Information

This service manual contains technical information which will allow service personnel's to understand and service this model.
Please place orders using the parts list and not the drawing reference numbers.

If the circuit is changed or modified, this information will be followed by supplement service manual to be filed with original service manual.

1) This service manual does not contain the following information, because of the impossibility of sevicing at component level.

   * Schematic Diagram, Block Diagram and P.C.B. layout of RAM/Digital P.C.B. Module.
   * Parts List for individual parts of RAM/Digital P.C.B. Module.
   * Exploded View and Parts List for individual parts of RAM/Digital P.C.B. Module.

2) The following category are recycle module part. Please send them to Central Repair Center.

   * RAM/Digital P.C.B. Module
   (EH65EE: RFKNEH65EE, EH65GC: RFKNEH65GC, EH65GCS: RFKNEH65GCS, EH65GN: RFKNEH65GN)

3.2. Caution for DivX

Please will always pass the customer "Warning for Customers Who Use the DivX Video-on-Demand content." with the product and get it when you unavoidably exchange EEPROM or P.C.B. including EEPROM (When the product is exchanged, it is the same.).
You must use print attached to service part (EEPROM or P.C.B. including EEPROM) or must use copy of print below as "Warning for Customers who use the DivX Video-on-Demand content."
Information needed without fail for the customer for whom it is used continuing DivX Video-on-Demand Service to "Manual for the customer" is recorded.

Appendix:

* Parts that memorize user's information are only EEPROM.
* The registration of Registration Code is possible for half a year up to 6 recorders up to 10 recorders a year. Replacement of EEPROM or P.C.B. including EEPROM spends one of this.

Registration Code is memorized in EEPROM (RFKFxxxxxx).
Model without VHS: Main P.C.B.
Model with VHS: Digital I/F P.C.B. (Power & DVD I/F/P.C.B.)
If exchange above P.C.B. or EEPROM, new registration Code differ from previous Registration Code will be generated. In this case if your customer uses DivX Video-on-Demand service, he/she will no longer be able to play any content that he/she purchased under that same registration code.
Therefore your customer will need to obtain and register the new registration code.

*Copy this page and cut on the dotted line and give the lower half to your customer.

Warning for Customers who use the DivX Video-on-Demand content.

1. The registration code has been changed for the repair of the product or the product exchange.
2. Obtain and register a new registration code, otherwise you will no longer be able to play DivX Video-on-Demand content.
3. Follow the procedure on the DivX Video-on-Demand web site to register at
   http://vod.divx.com/
   * If you do not use the DivX Video-on-Demand content, please ignore this warning.

4 Specifications

Power supply	EH65EE,GN	AC220-240 V, 50 Hz
	EH65GC,GCS	AC220-240 V, 50 Hz / 60 Hz
Power consumption	Approx. 34 W	
Power consumption in standby mode	Approx. 2 W (Power Save mode)	
Recording system	DVD-RAM: DVD Video Recording format DVD-R: DVD-Video format DVD-R DL (Dual Layer): DVD-Video format DVD-RW: DVD-Video format +R +R DL (Double Layer) +RW	
Optical pick-up	System with 1 lens, 2 integration units (662 nm wavelength for DVDs, 780 nm wavelength for CDs)	
Recordable discs	DVD-RAM	
	Ver.2.0 Ver.2.1/3X-SPEED DVD-RAM Revision 1.0 Ver.2.2/5X-SPEED DVD-RAM Revision 2.0	
	DVD-R	
	for General Ver.2.0 for General Ver.2.0/4X-SPEED DVD-R Revision 1.0 for General Ver.2.x/8X-SPEED DVD-R Revision 3.0 for General Ver.2.x/16X-SPEED DVD-R Revision 6.0 for DL Ver.3.0 for DL Ver.3.x/4X-SPEED DVD-R for DL Revision 1.0	
	DVD-RW	
	Ver.1.1 Ver.1.x/2X-SPEED DVD-RW Revision 1.0 Ver.1.x/4X-SPEED DVD-RW Revision. 2.0 Ver.1.x/6X-SPEED DVD-RW Revision. 3.0	
	+R	
	Ver.1.0 Ver.1.1 Ver.1.2 Ver.1.3 for DL Ver.1.0	
	+RW	
	Ver.1.1 Ver.1.2/4X-SPEED	
Internal HDD Capacity	250GB	
Quick Start for Recording (Quick Start: ON)	1 Sec. Quick Start for Recording on DVD-RAM and HDD* (when connecting to TV using 21-pin Scart, Component Video, Video or S-Video terminals) *From the power off state, recording on DVD-RAM and HDD starts about 1 second after first pressing the power button and then sequentially pressing the REC button (Quick Start Mode).	

Region number	EH65EE	Region No.5
	EH65GC	Region No.2
	EH65GCS	Region No.3
	EH65GN	Region No.4
Playble discs	DVD-RAM: DVD Video Recording format DVD-R: DVD-Video format, MP3(EH65EE Only), JPEG(EH65EE Only), DivX DVD-R DL (Dual Layer): DVD-Video format DVD-RW: DVD-Video format, DVD Video Recording format +R +R DL (Double Layer) +RW DVD-Video DVD-Audio CD-Audio (CD-DA) Video CD CD-R/CD-RW (CD-DA, Video CD, SVCD(EH65EE Only), MP3, JPEG, DivX formatted discs) SVCD(EH65EE Only)	
Recording Mode	Approx. XP: 10Mbps, SP: 5Mbps, LP: 2.5Mbps EP: 1.7Mbps/1.2Mbps	
Recording time	Max. 8 hours (using 4.7 GB disc) XP : Approx. 1 hour SP : Approx. 2 hours LP : Approx. 4 hours EP : Approx. 6 hours/8 hours Max. Approx. 443 hours with 250GB HDD (EP 8H mode) XP : Approx. 55 hours SP : Approx. 111 hours LP : Approx. 222 hours EP : Approx. 333/443 hours	

Approx.

Recording Mode	DVD-RAM 4.7GB	DVD-RAM 9.4GB (Double Sided)	DVD-R/ DVD-RW/ +R/+RW 4.7GB	DVD-R DL 8.5GB	+R DL 8.5GB	HARD DISC 250GB
XP High picture quality recording mode	1 hour	2 hours	1 hour	1 hour 45 minis	1 hour 45 minis	55 hours
SP Standard recording mode	2 hours	4 hours	2 hours	3 hours 35 minis	3 hours 35 minis	111 hours
LP Long recording mode	4 hours	8 hours	4 hours	7 hours 10 minis	7 hours 10 minis	222 hours
EP Extra long recording mode(6hours)	6 hours	12 hours	6 hours	10 hours 45 minis		333 hours
EP Extra long recording mode(8hours)	8 hours	16 hours	8 hours	14 hours 20 minis		443 hours

Approximate transferring (dubbing) times (Max. speed)

HDD		5X Speed DVD-RAM		16X Speed DVD-R		4X Speed DVD-R DL		4X Speed(*1) DVD-RW		8X Speed(*2) +R		2.4X Speed +R DL		4X Speed +RW	
Rec mode	Rec time	Required time	Speed	Required time	Speed	Required time	Speed	Required time	Speed	Required time	Speed	Required time	Speed	Required time	Speed
XP	1 hour	12 min.	5x	6 min.	10x	15 min.	4x	15 min.	4x	8 min. 35s.	7x	25 min.	2.4x	15 min.	4x
SP		6 min.	10x	2 min. 25s.	25x	7 min. 30s.	8x	7 min. 30s.	8x	4 min. 10s.	14x	12 min. 30s.	4.8x	7 min. 30s.	8x
LP		3 min.	20x	1 min. 15s.	48x	3 min. 45s.	16x	3 min. 45s.	16x	2 min. 25s.	25x	6 min. 15s.	7.2x	3 min. 45s.	16x
EP(6H)		2 min.	30x	52s.	69x	2 min. 30s.	24x	2 min. 30s.	24x						
EP(8H)		1 min. 30s.	40x	42s.	86x	1 min. 53s.	32x	1 min. 53s.	32x						

Note) The above rated value indicates the fastest time and speed required for copying one-hour title from HDD to each disc in the above list supporting High-Speed copying.
The amount of time and speed may vary depending on the conditions such as the area on where imformation is written or unique feature on the disc.

*1: In this unit,copying with 6X Speed DVD-RW disc will be performed at the same speed as 4X Speed DVD-RW disc takes.
*2: In this unit,copying with 16X Speed +R disc will be performed at the same speed as 8X Speed +R disc takes.

Compression Method	DVD (DivX), CD (DivX)	
	DivX 3.11, 4.x, 5.x GMC (Global Motion Compensation) is not supported.	
	DVD (DivX), CD (DivX) Common Items	
	Maximum number of folders: 300 Recognizable folders per disc on this unit (including the root folder) Maximum number of DivX files: 200 Recognizable DivX files per disc on this unit*1 *1Total number of recognizable file including MP3, JPEG, DivX and other type of files is 4000.	
	DVD (MP3) (EH65EE Only), CD (MP3)	
	Format : ISO9660 level1 or 2 (except for extended formats), Joliet Compatible compression rate : 32kbps ~ 320kbps Compatible sampling rate : 16kHz, 22.05kHz, 24kHz, 32kHz, 44.1kHz, 48kHz This unit is not compatible with ID3 tags.	
	DVD (JPEG) (EH65EE Only), CD (JPEG)	
	Format : ISO9660 level1 or 2 (except for extended formats), Joliet Compatible pixels : between 34 × 34 and 6144 × 4096 pixels Sub Sampling 4:2:2 or 4:2:0 This unit is not compatible with MOTION JPEG.	
	DVD (MP3) (EH65EE Only), CD (MP3), DVD (JPEG) (EH65EE Only), CD (JPEG) Common Items	
	Maximum number of folders : 300 Recognizable folders per disc on this unit (including the root folder) Maximum number of MP3 files : 3000 Recognizable MP3 files per disc on this unit *1 Maximum number of JPEG files : 3000 Recognizable JPEG files per disc on this unit *1 This unit is compatible with multi-session. This unit is not compatible with packet writing. *1 Total number of recognizable file including MP3, JPEG, DivX and other type of files is 4000.	
	SVCD (EH65EE Only)	
	Format: IEC62107 This unit is not compatible with "Chaoji VCD" available on the market including CVD, DVCD and SVCD that do not conform to IEC62107.	

Video			
Video system	EH65EE/GC/GCS		
	SECAM (only input)/PAL colour signal, 625 lines, 50 fields NTSC colour signal, 525 lines, 60 fields		
	EH65GN		
	PAL colour signal, 625 lines, 50 fields NTSC colour signal, 525 lines, 60 fields		
Recording system	MPEG2 (Hybrid VBR)		
Video Input	EH65EE/GC/GCS		
	Video In: (SECAM/PAL/NTSC)	AV1/AV2(21pin), AV3/AV4(pin jack) 1Vp-p ; 75Ω, termination	
	S-Video In: (SECAM/PAL/NTSC)	AV2(21pin), AV3/AV4(S terminal) 1Vp-p ; 75Ω, termination	
	RGB In (PAL) (EH65EE Only)	AV2(21pin), 0.7Vp-p (PAL); 75Ω, termianation	
	EH65GN		
	Video In: (PAL/NTSC)	AV1/AV2(21pin), AV3/AV4(pin jack) 1Vp-p ; 75Ω, termination	
	S-Video In: (PAL/NTSC)	AV2(21pin), AV3/AV4(S terminal) 1Vp-p ; 75Ω, termination	
Video Output	Video Out: (PAL/NTSC)	AV1/AV2(21pin) Video out (Pin jack) 1Vp-p ; 75Ω, termination	
	S-Video Out: (PAL/NTSC)	AV1(21pin), S-Video out (S terminal) 1Vp-p ; 75Ω, termination	
	RGB Out: (PAL/NTSC)	AV1(21pin), 0.7Vp-p(PAL) ; 75Ω, termination	
	Component video out: (NTSC 480P/480I) (PAL 576P/576I)	Y: 1.0Vp-p ; 75Ω, termination PB: 0.7Vp-p ; 75Ω, termination PR: 0.7Vp-p ; 75Ω, termination	

Antenna reception system	EH65EE	
	OIRT (PAL-DK), (SECAM-DKK1)	VHF: CH R1 - CH R12 UHF: CH 21 - CH 69 CATV: CH 44MHz - 470MHz
	CCIR (PAL-BGH) (SECAM-BG)	VHF: CH E2 - CH E12 UHF: CH E21 - CH E69 CATV: CH S01 - CH S05 CH M1 - CH M10, CH U1 - CH U10 CH S21 - CH S41
	Hong Kong (PAL-I)	UHF: CH 21 - CH 69
	EH65GC	
	CCIR (PAL-BGH) (SECAM-BG)	VHF: CH E2 - CH E12 UHF: CH E21 - CH E69 CATV: CH S01 - CH S05 CH M1 - CH M10, CH U1 - CH U10 CH S21 - CH S41
	EH65GCS	
	OIRT (PAL-DK), (SECAM-DKK1)	VHF: CH R1 - CH R12 UHF: CH 21 - CH 69 CATV: CH 44MHz - 470MHz
	CCIR (PAL-BGH) (SECAM-BG)	VHF: CH E2 - CH E12 UHF: CH E21 - CH E69 CATV: CH S01 - CH S05 CH M1 - CH M10, CH U1 - CH U10 CH S21 - CH S41
	Hong Kong (PAL-I)	UHF: CH 21 - CH 69
	China (PAL-D)	VHF: CH 1 - CH 12 UHF: CH 13 - CH 57 CATV: CH Z1 - Z35
	EH65GN	
	Australia (PAL-B)	VHF: CH 0 - CH 12 UHF: CH 28 - CH 69 CATV: CH 45MHz - 470MHz
	New Zealand (PAL-BG)	VHF: CH 1 - CH 11 UHF: CH 21 - CH 69 CATV: CH 44MHz - 470MHz
RF Converter Output	Not provided	

SD System	
SD Card Slot	SD memory card slot: 1pc
Still Picture (JPEG, TIFF)	
Compatible Media	SD memory card */Multi Media Card *Includes miniSD™ cards. (A miniSD™ adapter needs to be inserted.)
Format	FAT12, FAT16
Image file format	JPEG conforming DCF (Design rule for Camera File system) (sub sampling; 4:2:2 or 4:2:0) TIFF (Uncompressed RGB chunky) DPOF Compatible
Number of pixels	34 x 34 to 6144 x 4096
Thawing time	Approx. 3sec (6M pixels, JPEG)
SD Video (MPEG2)	
Compatible Media	SD memory card */Multi Media Card *Includes miniSD™ cards. (A miniSD™ adapter needs to be inserted.)
Codec	MPEG2 (SD-Video Entertainment Video Profile)
File format	SD-Video format conforming
Video Recording conversion and transfer is possible from card to HDD or DVD-RAM disc. After Video Recording conversion and transfer to HDD or DVD-RAM disc, the playback is possible.	
Audio system	
Recording system	Dolby Digital 2ch, Linear PCM (XP mode)
Analog Input	Audio In: AV1/AV2 (21Pin) AV3/AV4 (Pin Jack) Intput Level: Standard: 0.5Vrms, Full scale: 2.0Vrms at 1kHz Input impedance: More than 10KΩ
Analog Output	Audio Out: AV1/AV2 (21Pin) Audio Out (Pin Jack) Output Level: Standard: 0.5Vrms, Full scale: 2.0Vrms at 1kHz Output impedance: Less than 1.0KΩ
DV Input	IEEE 1394 Standard, 4pin 1pc
Digital Audio Output	Optical Terminal (PCM,Dolby Digital,DTS,MPEG)
HDMI Output	19 pin typeA x 1 HDMI Ver. 1.2a (EDID Ver.1.3)
Dimensions	430 (W) x 58 (H) x 329 (D) mm
Mass	Approx. 4.2 kg
Operating temperature	5˚C - 40˚C
Operating humidity range	10 %-80 % RH (no condensation)
LASER Specification (Class 1 LASER Product)	
Wave length	780 nm(CDs), 662 nm(DVDs)
Laser power	No hazardous radiation is emitted with the safety protection.
Solder	These models use lead free solder (PbF).

Notes : Mass and dimensions are approximate.
Specifications are subject to change without notice.

5 New Feature

5.1. About DivX

5.1.1. General

DivX is a new video compressing format that is applied MPEG4 technology to improve image quality and the compressibility, and it is developed by the DivXNetworks, Inc., Video file of high resolution and the high picture quality can be made though it is a high compressibility.

DivX codec is necessary for converting video to DivX file and .playback files made.

5.1.2. Operating Instructions about DivX Video-on-Demand Content

DivX Video-on-Demand (VOD) content is encrypted for copyright protection. In order to play DivX VOD content on this unit, you first need to register the unit.

Follow the on line instructions for purchasing DivX VOD content to enter unit´s registration code and register unit. Visit www.divx.com/vod for more information.

Display unit´s registration code.

- **<u>We recommend that you make a note of this code for future reference</u>.**
- **<u>After playing DivX VOD content for first time, another registration code is then displayed in "DivX Registration". Do not use this registration code to purchase DivX VOD content</u>. If you use this code to purchase DivX VOD content, and then play content on this unit, you will no longer be able to play any content that you purchased using previous code.**
- If you purchase DivX VOD content using a registration code different from this unit's code, you will not be able to play this content. ("Authorization Error" is displayed.)

Regarding DivX content that can only be played a set number of times

Some DivX VOD content can only be played a set number of times.

When you play this content, remaining number of plays is displayed. You cannot play this content when number of remaining plays is zero. ("Rental Expired" is displayed.)

When playing this content

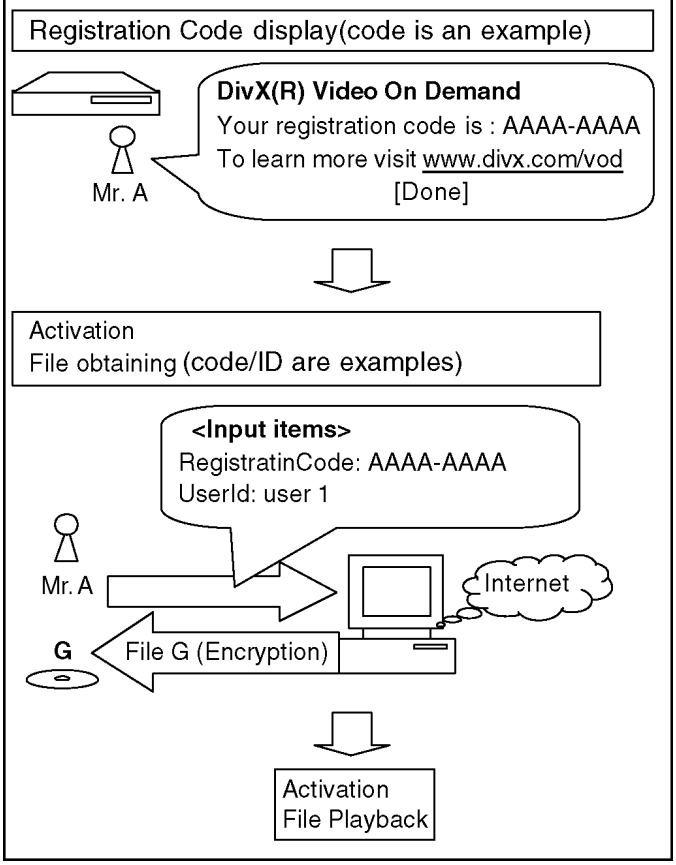
- Number of remaining plays is reduced by one if
  -you press [POWER].
  -you press [STOP].
  -you press [◀◀ SKIP], [◀◀ SLOW/SEARCH] or [▶▶ SLOW/SEARCH] etc. and arrive at another content or start of content being played.
  -scheduled recording starts on HDD.
  -you press [DRIVE SELECT] to change drive.

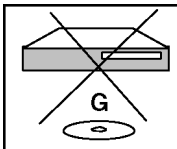
* Resume functions do not work.

Typical Playback procedure of DivX VOD (Video On Demand)

Case 1	When DivX VOD is used newly.
Case 2	When EEPROM or P.C.B. including EEPROM was replaced for repairing.
Case 3	When recorder was exchanged to another recorder for repairing.
Case 4	When customer own second recorder
Case 5	When owner of recorder was changed to another.

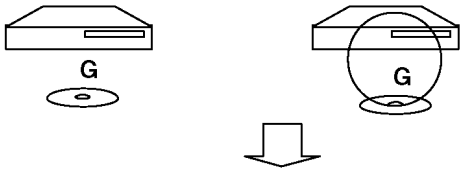
Case 1. When DivX VOD is used newly.





Activation cannot be done for other recorders by file G.

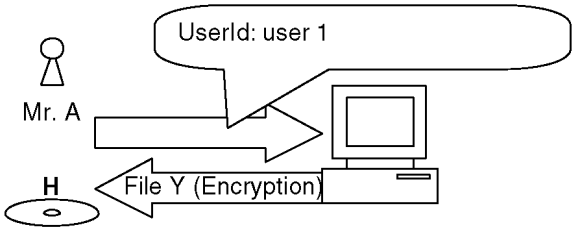
<Activation>
Recorder is set for user 1
→File G can be played back



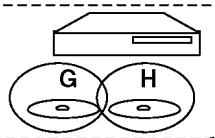
Registration Code display(code is an example)

***The code different from code before Activation is displayed.**
(This code is unnecessary for Mr. A)

Ovtainment /Playback of additional file after Activation (code/ID is an example)

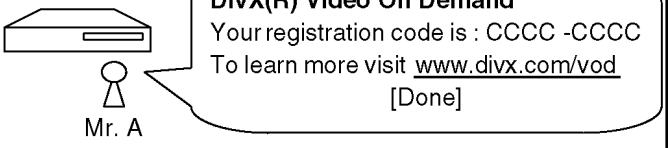


File of user 1 can be played back

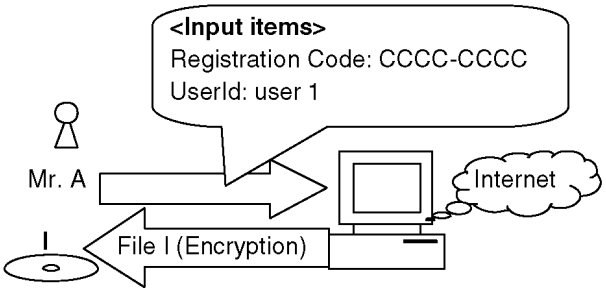


Case 2	**When EEPROM or P.C.B. including EEPROM was replaced for repairing.**
Case 3	**When recorder was exchanged to another recorder for repairing.**

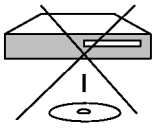
New Registration Code is displayed
(Code is an example)



Activation
File obtaining (code/ID are example)

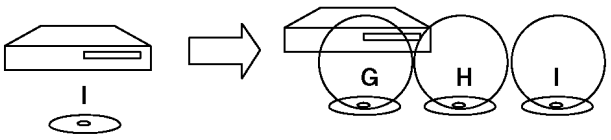


Activation File Playback

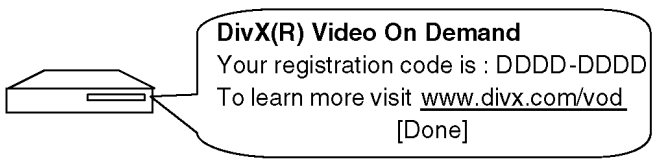


Activation cannot be done for other recorders by file I.

<Activation>
Recorder is set for user 1
→File G, H, I can be played back

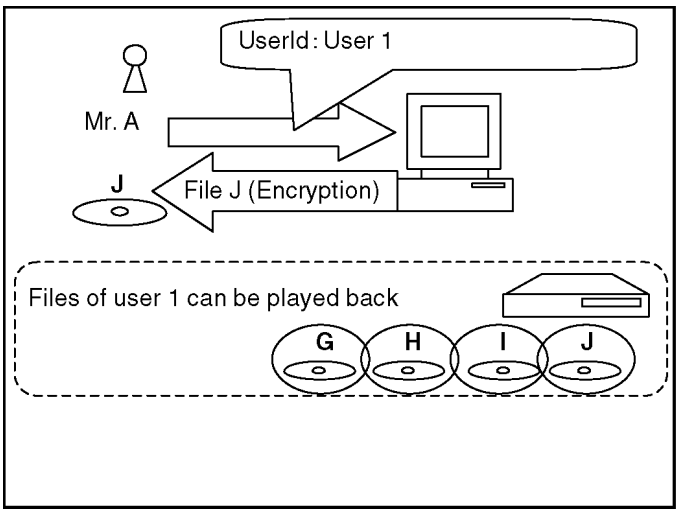


Registration Code display after Activation (example)



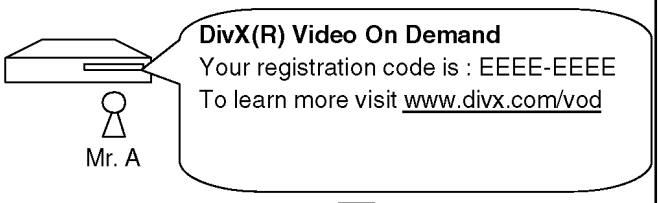
The code different from code before Activation is displayed.
(This code is unnecessary for Mr. A)

Obtainment /Playback of additional file after Activation (code/ID is an example)

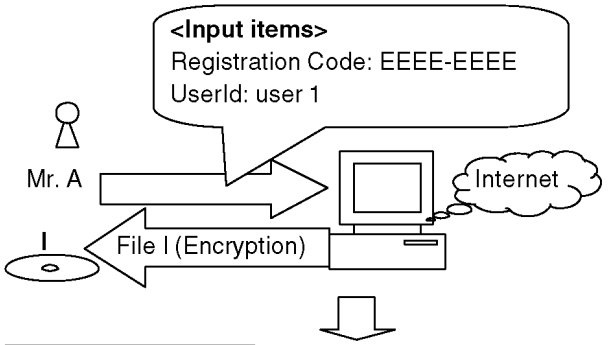


Case 4 | **When customer own second recorder**

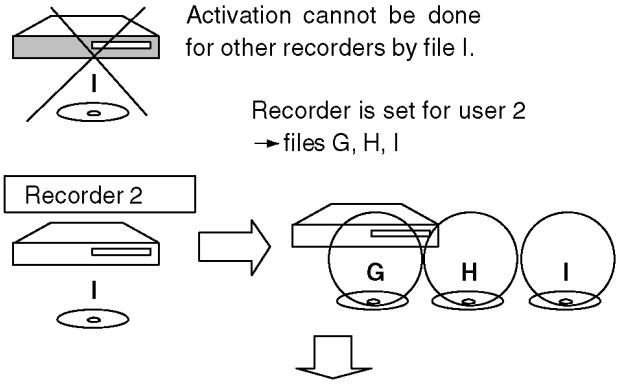
Registration Code display of sec ond recorder (code is an example)



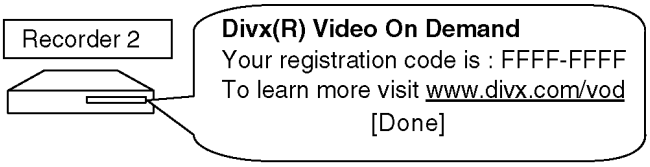
Activation
File obtaining (code/ID are example)



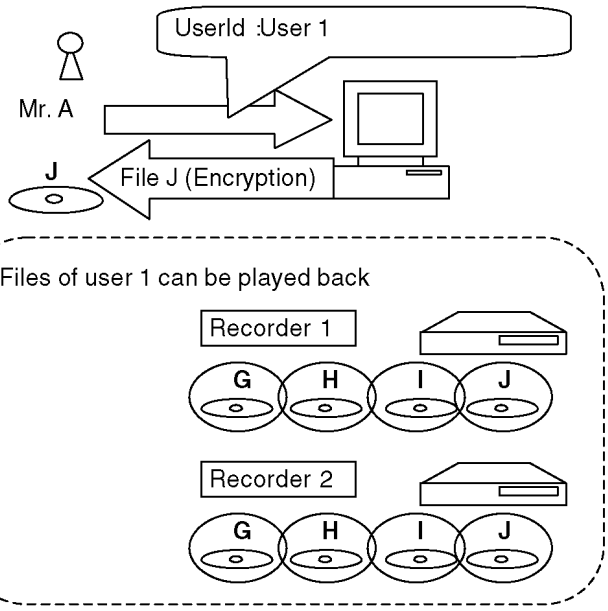
Activation
File Playback



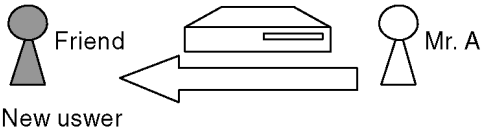
Registration Code display after Activation (example)



Obtainment /Playback of additional file after Activation (code/ID is an example)



Case 5 | **When owner of recorder was changed to another.**



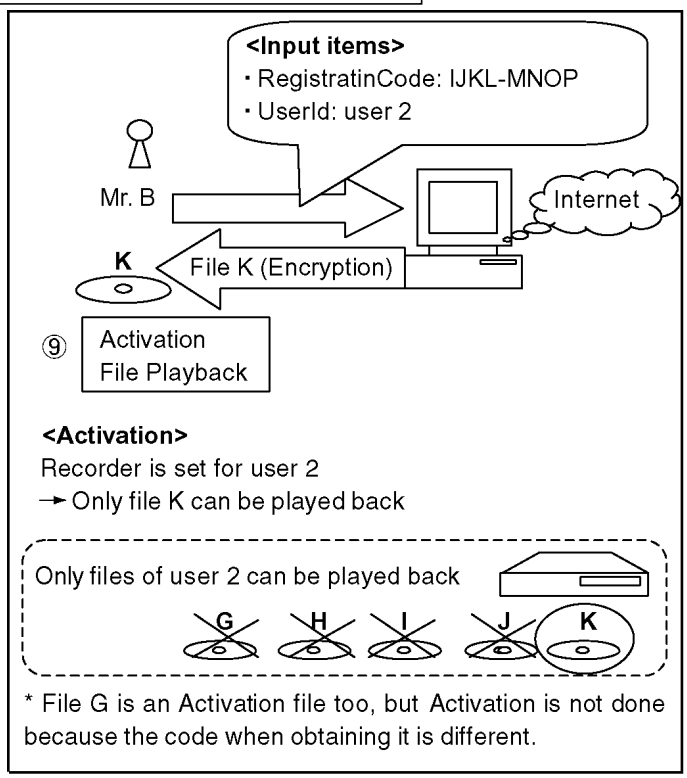
New uswer
Mr. B (user 2)

It is necessary to update information on the recorder

⑦ Activation

Registration Code is displayed

⑧ Activation
File obtaining (code/ID are example)



File kind

(There are two kind of Activation files as follows too.)

· Rental : There is a playback limitation

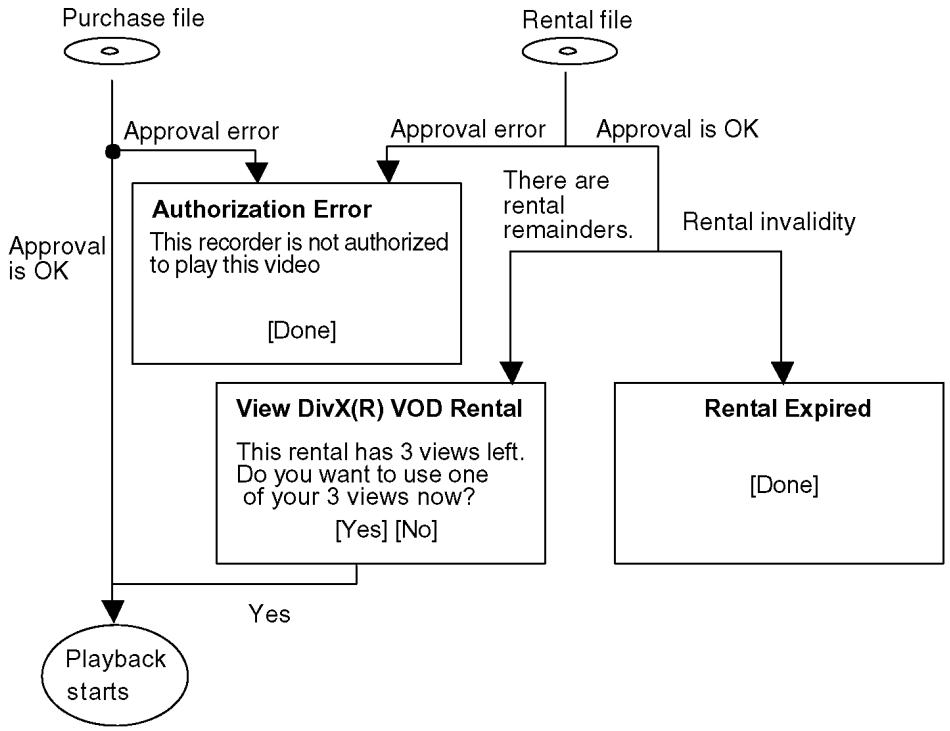
· Purchase : Unrestricted

Also there is next file as DRM files besides the above-mentioned.

·**Base:** It is not necessary to approve though the contents is being encoded. →If it is recorder/player for DRM, any can play back. (It is the same as usual DivX file when seeing from user.)

Screen shift (Error display)

Whether approval is OK or not : Whether the recorder is corresponding to User information on the file or not



5.1.3. About DivX DRM

Divx file includes file to which DRM(Digital Right Management) is applied and file not applied.

This item is a content that relates only in treating file to which DRM is applied.

1. Registration Code display function
2. User´s registration and approval function
3. Rental management function

1) Registration Code display function

Registration Code is alphanumeric character sequence 8bytes inputted as recorder information, in case a use purchases or rent a DivX DRM file in a network.

Registration code is a character sequence generated at random, and differs in each recorder.

Moreover, Registration code is updated by new user authentication ever if same recorder.

2) User´s registration and approval function

- Only one user can register for one recorder. If user´s registration is not done with the recorder, DivX file cannot be played back.
- User´s registration is performed only when a DivX DRM file is first chosen by recorder
- DivX DRM file that can perform user´s registration is only a file that is registered Registration Code and purchased or rented.
- User authentication is performed whenever DivX DRM file is played back.

  Error message is displayed when failing in user´s registration and approval.

3) Rental management function

There are purchase file without registration of number of playback and rental files with registration of number of playback as Divx file. Number of playback of rental file is counted by the recorder.

When rental file is played, remaining number of times that can be played back will be shown to users, recorder requests users to input yes or no.

Following specifications have been installed for the rental files in the purpose to clarify the count condition of number of times of playback.

- Conditions on counting number of times of play.
  1. When a file was opened successfully. (At the time of playback start)
  2. When you have done review operation from the start. (Skip to file head)
     - At this time, remaining number of times that can be played back and confirmation message [Do you play really?] are displayed.
     - When the playback point has been skipped to the top of title, number of playback is not counted if the top of title was not recognized.
     - Even if the power failure occurs after start of playback of rental file, number of times of playback counted at start of the playback is held as it is. (Though playback stops by power failure, the number of times of playback is not counted.)

  When it has reached head of title, the playback is ended, and screen becomes DivX menu (There is no resume) and then cursor is located on title that has been played back.

  Then if the same file was continuously played back, it begins to playback from the file head.

Note:

Above mentioned stored user information and number of times of playback are not erased by update of firmware or by initialization by test mode.

5.2. HDAVI Control (HDMI Link)

Linked operations by HDAVI Control (HDMI Link)

5.2.1. What is HDMI

HDMI is abbreviation of [High-Definition Multimedia Interface], and is digital interface standard for next generation TV corresponding to follows.

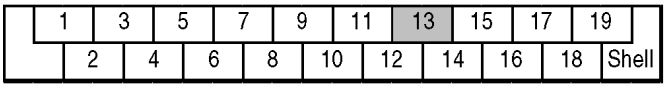
1. Non-compressing high quality digital image
2. Digital transmission of multi channel digital audio.
3. Two way communication of control signal of control straightening between equipments

Cable	Transmission method	Directionality	Transmission signal	Feature
HDMI Cable	Digital (~4.455Gbps)	One-way	Digital image (non-compression high-definition television image)	Clock line in one system and data line in three systems can high-speed communicate high reliability because of balance communication that uses three respectively every one system. Moreover, because high-speed data line in three systems can be used at same time, it has ten of other digital cables times or more transmission ability. And can transmit high-definition television image of non-compression, 24 bit high sound quality PCM voice of multi-CH of DVD audio (to 6ch) and Bit stream signal of surround to 8ch of DVD video (5.1ch, 6.1ch, and 7.1ch, etc.) as a digital signal of no deterioration. It has power supply line and a interactive control signal line communication independent of AV signal, aCd can an advanced control between equipments. Therefore it can correspond to making of AV equipment in the future highly a network
		One-way	Digital Audio (6ch/24 bit high sound quality PCM of DVD audio/ Bit stream of surround to 8ch of DVD video)	
		Interactive	Digital control signal (Advanced control between equipments)	

Pin Name

No	Pin Name
1	TMDS Data2(+)
2	TMDS Data2(shield)
3	TMDS Data1(-)
4	TMDS Data1(+)
5	TMDS Data1(shield)
6	TMDS Data2(-)
7	TMDS Data0(+)
8	TMDS Data0(shield)
9	TMDS Data0(-)
10	TMDS Clock(+)
11	TMDS Clock(shield)
12	TMDS Clock(-)
13	CEC (Linked operation control)
14	NC
15	SCL
16	SDA
17	Ground
18	+5v Power
19	Hot Plug Detect

Pin layout of plug of HDMI cable seen from outside.



5.2.2. Link functions

Functions
(1) Automatic Input switch
(2) Link of Power

In case setting of [FUNCTIONS] → [Setup] → [TV Screen] → [Functions of HDMI] → [Control with HDMI] are on, all above equipments Link functions are effective.

5.2.3. Outline of Equipments Linked functions

(1) Automatic Input switch

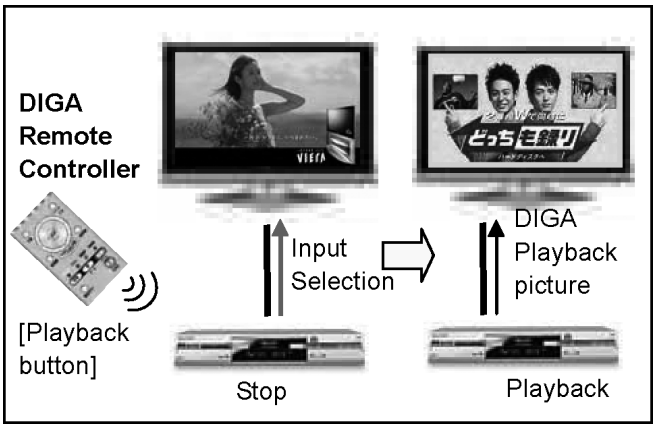
At starting of playback/ GUI display by DIGA, it turns on power of VIErA, and it displays picture of DIGA onto screen of VIErA.

Starting of playback:

It includes automatic playback of DVD-Video and so on. And it includes picture of screen saver too.

GUI display:

FUNCTIONS, DIRECT NAVIGATOR, TV PROGRAM, PROG/CHECK, Timer Recording, G-code, Initial setting, Playback setting, Play list, SD/DVD guide, Warning messages that user can select and so on.



(2) Power Link

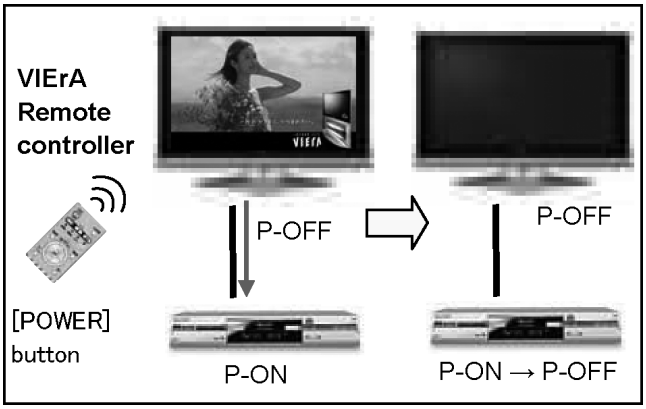
Power of DIGA is turned off linking to POWER OFF of VIErA.

- Power of DIGA is not turned on linking to POWER ON of VIErA.
- It is limited in following cases that DIGA links to POWER OFF of VIErA.

1. During EE display (While Timer recording is being executed/ Functions is being displayed are included.)
2. Case that DIGA is playing back (only North America/ Japan)

However except cases below.

- During EE display, but manual recording is being executing/ during EXT_Link recording.
- During Tray is being opened.
- Case that DIGA is in status that power cannot turn off (during dubbing, during finalize).



6 Location of Controls and Components

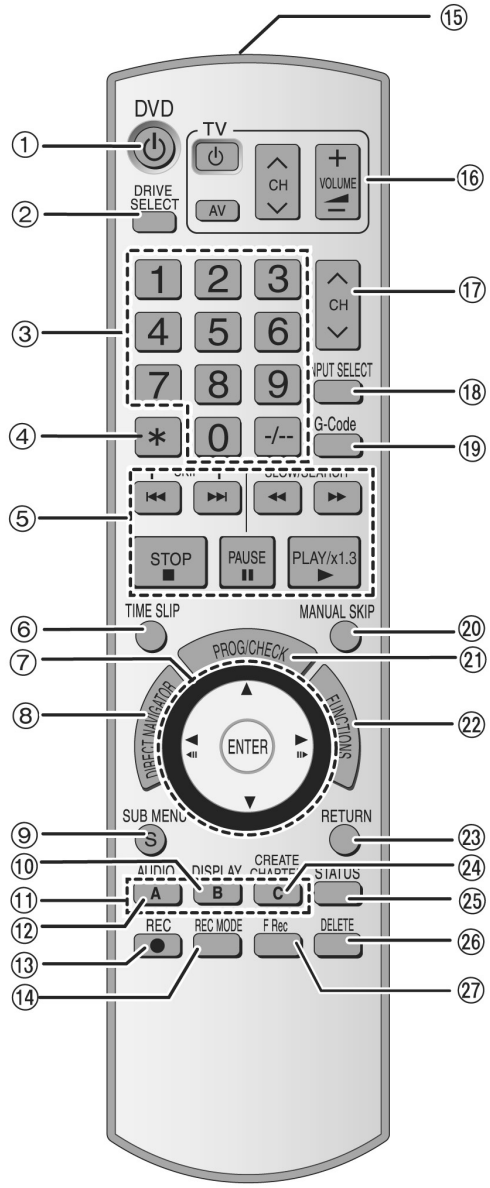
Followings are the Location of Controls and Components for DMR-EH65GC/GCS/GN as a sample.

For other model, refer to each Operation Instructions.

Remote control

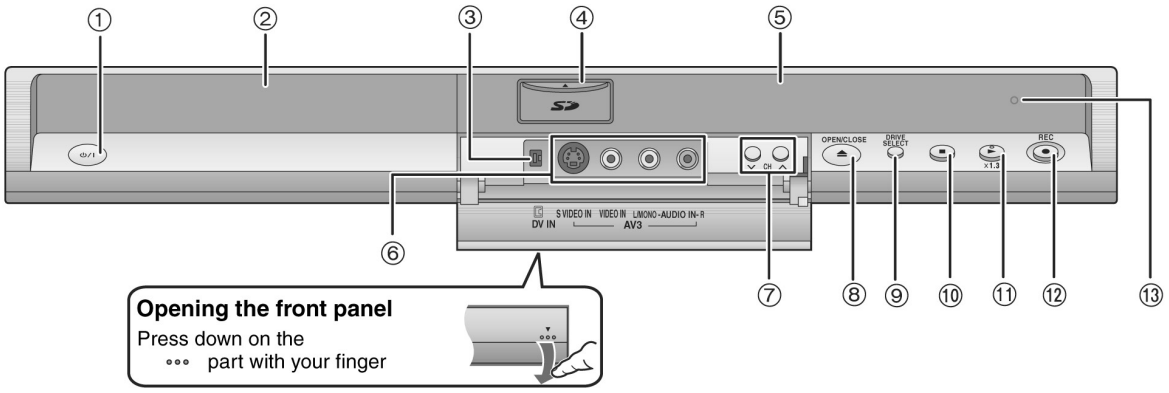
Instructions for operations are generally described using the remote control.

e.g., **Australia and N.Z.**



① Turn the unit on
② Select drive (HDD, DVD or SD)
③ Select channels and title numbers, etc./Enter numbers
④ Cancel
⑤ Basic operations for recording and play
⑥ Skip the specified time
⑦ Selection/Enter, Frame-by-frame
⑧ Show Top menu/Direct Navigator
⑨ Show sub menu
⑩ Show on-screen menu
⑪ Buttons for switching between Video/Picture and Video/Playlists, manual tuning settings
⑫ Select audio
⑬ Start recording
⑭ Change recording mode
⑮ Transmit the remote control signal
⑯ Television operations
⑰ Channel select
⑱ Input select (AV1, AV2, AV3, AV4 or DV)
⑲ **For Australia and N.Z.** Show G-CODE screen
⑳ Skip 30 seconds forward
㉑ Show timer recording programme screen
㉒ Show FUNCTIONS window
㉓ Return to previous screen
㉔ Create chapter
㉕ Show status messages
㉖ Delete items
㉗ Flexible Recording

Main unit



① **Standby/on switch (⏻/I)**
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.
② Disc tray
③ Connection for digital video (DV) camcorder
④ SD card slot
⑤ Display
⑥ Connection for camcorder etc.
⑦ Channel select
⑧ Open/close disc tray
⑨ Select drive
Drive changes each time you press [DRIVE SELECT].
⑩ Stop
⑪ Start play
⑫ Start recording/Specify a time to stop recording
⑬ Remote control signal sensor

Rear panel terminals

Inserting, Removing the SD card

When the card indicator (“SD”) on the unit’s display is flashing, the card is being read from or written to. Do not turn off the unit or remove the card. Such action may result in malfunction or loss of the card’s contents.

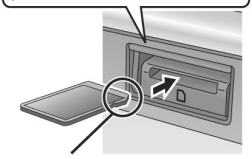
- **Inserting foreign objects can cause a malfunction.**
- You can use SD Memory Cards with capacities from 8 MB to 2 GB.

Opening the cover

Press the protruding part to open the cover.

Inserting the card

Press on the centre of the card until it clicks into place.

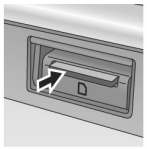


Insert the card label up with the cut-off corner on the right.
(Do not forget to close the cover. ➡ right)

If you are using a miniSD™ card, insert it into the miniSD™ card adaptor that comes with the card.
Insert and remove this adaptor from the unit.

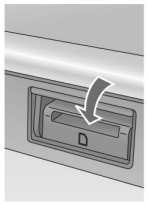
Removing the card

❶ Press on the centre of the card.
❷ Pull it straight out.



Closing the cover

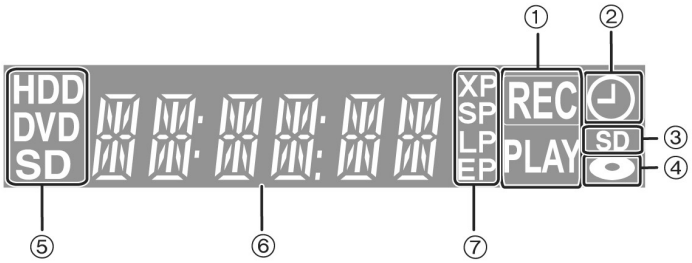
Press down.



Automatic drive select function

- If you insert an SD card while the unit is stopped, the “SD Card” screen is displayed. Select an item and press [ENTER] to switch to the SD drive. If you remove an SD card, the HDD drive is automatically selected.

The unit’s display



①

Recording	Playback	Recording/Playback
REC	PLAY	REC PLAY

② Timer recording indicator
③ Lights when the SD card is inserted in the card slot.
④ Lights when a disc that is supported by this unit is inserted in the tray.
⑤ Lights when the HDD, DVD or SD drive is selected
⑥ Main display section
⑦ Recording mode

7 Operation Instructions

7.1. Taking out the Disc from DVD-Drive Unit when the Disc cannot be ejected by OPEN/CLOSE button

7.1.1. Forcible Disc Eject

7.1.1.1. When the power can be turned off.

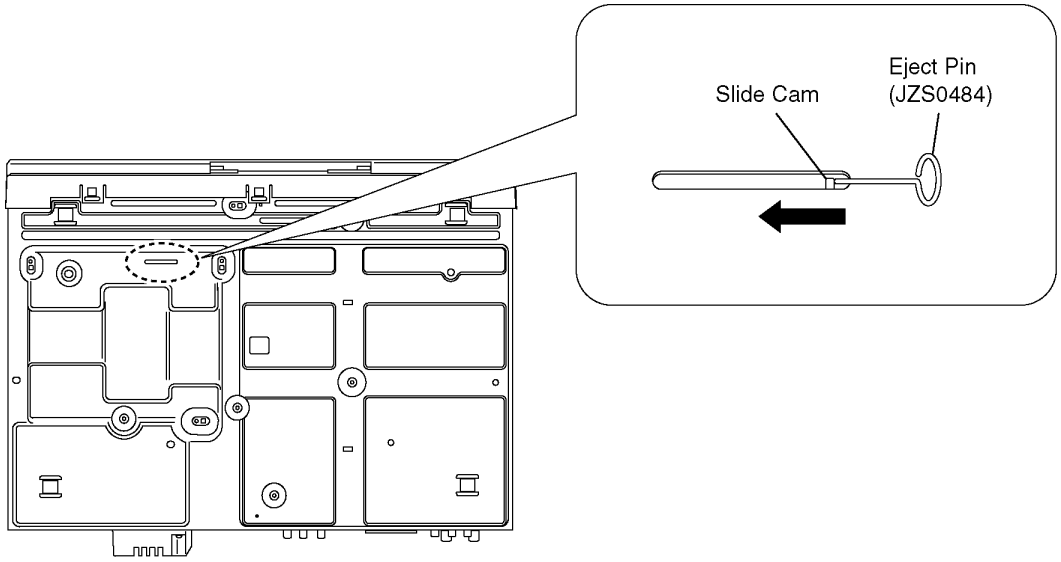
1. Turn off the power and press [STOP] [CH UP] keys on the front panel simultaneously for 5 seconds.

7.1.1.2. When the power can not be turned off.

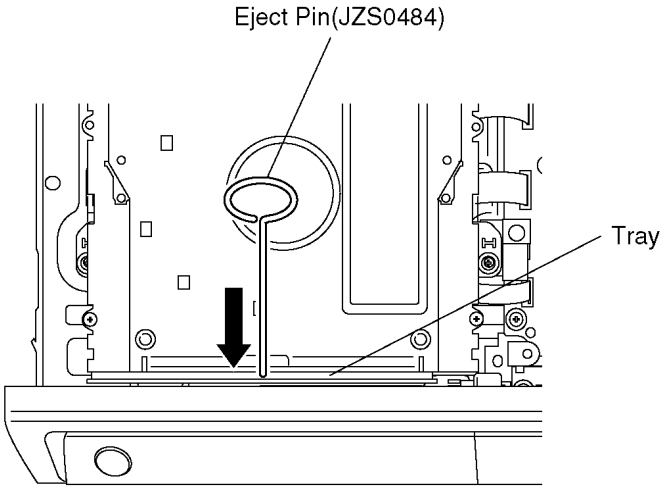
1. Press [POWER] key on the front panel for over 10 seconds to turn off the power forcibly, and press [STOP] [CH UP] keys on the front panel simultaneously for 5 seconds.

7.1.2. When the Forcible Disc Eject can not be done.

1. Turn off the power and pull out AC cord.
2. Remove the Top Case.
3. Put deck so that bottom can be seen.
4. Slide SLIDE CAM by Eject Pin (JZJ0484) or minus screw driver (small) in the direction of arrow to eject tray slightly.



5. Put deck upward, and push out Tray by Eject Pin (JZS0484) or minus screw driver (small).



8 Service Mode

8.1. Self-Diagnosis and Special Mode Setting

8.1.1. Self-Diagnosis Functions

Self-Diagnosis Function provides information for errors to service personnel by “Self-Diagnosis Display” when any error has occurred.

U, H** and F** are stored in memory and held.**

You can check latest error code by transmitting [0] [1] of Remote Controller in Service Mode.

Automatic Display on FL will be cancelled when the power is turned off or AC input is turned off during self-diagnosis display is ON.

Error Code	Diagnosis contents	Description	Monitor Display	Automatic FL display
U30	Remote control code error	Display appears when main unit and remote controller codes are not matched.	No display	DVD ＊ “*” is remote controller code of the main unit. Display for 5 seconds.
U59	Abnormal inner temperature detected	Display appears when the drive temperature exceeds 70°C. The power is turned off forcibly. For 30 minutes after this, all key entries are disabled. (Fan motor operates at the highest speed for the first 5 minutes. For the remaining 25 minutes, fan motor is also stopped.) The event is saved in memory as well.	No display	U59 “U59 is displayed for 30 minutes.
U61	The unit is carrying out its recovery process. (with no disc in the disc tray)	・The unit detected an error while recording or playing with no disc in the disc tray. The unit is carrying out its recovery process. This process restores the unit to normal operation. The unit is not broken. Wait until the message disappears.	No display	U61
U88	The unit is carrying out its recovery process. (with a disc in the disc tray)	・The unit detected an error while recording or playing with a disc in the disc tray. The unit is carrying out its recovery process. This process restores the unit to normal operation. The unit is not broken. Wait until the message disappears.	No display	U88
U99	Hang-up	Displayed when communication error has occurred between Main microprocessor and Timer microprocessor.	No display	U99 Displayed is left until the [POWER] key is pressed.
H19	Inoperative fan motor	When inoperative fan motor is detected after powered on, the power is turned off automatically. The event is saved in memory.	No display	No display
F00	No error information	Initial setting for error code in memory (Error code Initialization is possible with error code initialization and main unit initialization.)	No display	No display
F58	Drive hardware error	When drive unit error is detected, the event is saved in memory.	No display	No display
F34	Initialization error when main microprocessor is started up for program recording	When initialization error is detected after starting up main microprocessor for program recording, the power is turned off automatically. The event is saved in memory.	No display	No display
UNSUPPORT	Unsupported disc error	*An unsupported format disc was played, although the drive starts normally. *The data format is not supported, although the media type is supported. *Exceptionally in case of the disc is dirty.	**“This disc is incompatible.”**	UNSUP ↓ PORT Display for 5 seconds.
NO READ	Disc read error	*A disc is flawed or dirty. *A poor quality failed to start. *The track information could not be read.	**“Cannot read. Please check the disc.”**	NOREAD

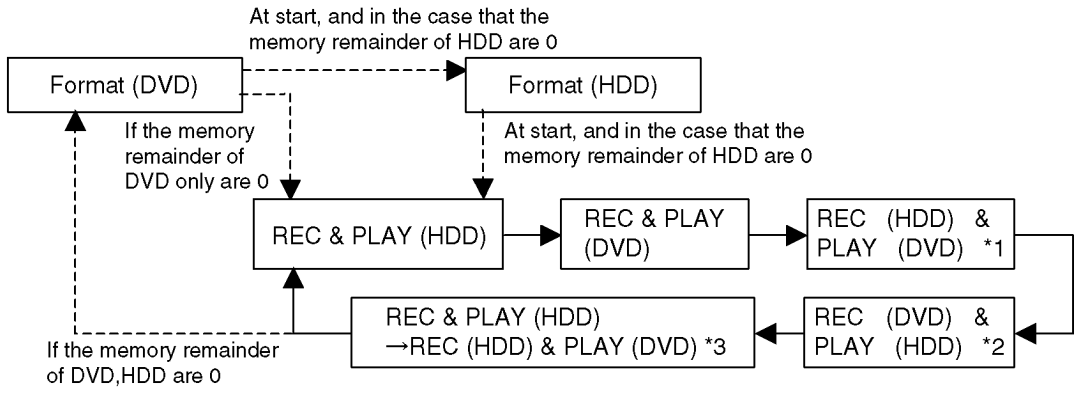
Error Code	Diagnosis contents	Description	Monitor Display	Automatic FL display
HARD ERR	Drive error	The drive detected a hard error.	"**DVD drive** error."	Display for 5 seconds. HARD ↓ ERR
SELF CHECK	Restoration operation	Since the power cord fell out during a power failure or operation, it is under restoration operation. *It will OK, if a display disappears automatically. If a display does not disappear, there is the possibility that defective Digital P.C.B. / RAM drive.	No display	SELF ↓ CHECK
PLEASE WAIT	Unit is in termination process	Unit is in termination process now. "BYE" is displayed and power will be turned off. In case "Quick Start" of setup menu is ON, it is displayed in restoration operation for AC off.	No display	PLEASE ↓ WAIT
UNFORMAT	Unformatted disc error	You have inserted an unformatted DVD-RAM or DVD-RW that is unformatted or recorded on other equipment.	Format This disc is not formatted properly. Format the disc in DISK MANAGEMENT?	UNFOR ↓ MAT
IR ERR	IR communication error	[IR ERR] is displayed when communication between Timer microprocessor and IR microprocessor fails.	No display	IR ERR
No REC	Recording is impossible	[No REC] is displayed when recording is impossible due to the defect, dirt or wound of media.	No display	NoREC
HDD ERROR	[HDD ERR] is displayed when start up of HDD was failed. (Except error of setting of Power on Stand-by)	a) When normal start up was failed. b) When start up at HDD boot was failed. c) When start up from state of P-OFF was failed. d) When start up from state of HDD SLEEP was failed. [HDD ERR] is displayed when above each start up of HDD was failed. *In case b), tray opens automatically and [HDDERR] is displayed until version up disc is inserted.	No display	HDDERR
HDD NG	Power on Stand-by setting error	[HDD NG] is displayed when power on Stand-by setting of HDD is NG or when HDD which power on Stand-by is not set to is used. Please try to replace HDD with junine HDD as service parts.	No display	HDD NG

8.1.2. Special Modes Setting

Item		FL display	Key operation
Mode name	Description		Front Key
TEST Mode	*All the main unit´s parameters (include tuner) are initialized.	TM AV1	Press [STOP], [CH UP] and [OPEN/CLOSE] keys simultaneously for five seconds when power is off.
Rating password	The audiovisual level setting password is initialized to "Level 8".	INIT	Open the tray, and press [REC] and [PLAY] simultaneously for 5 seconds.
Service Mode	Setting every kind of modes for servicing. *Details are described in "**8.1.3. Service Mode at a glance**".	SERV	When the power is off, press [CH UP], [OPEN/CLOSE] and [REC] keys simultaneously for 5 seconds.

Item		FL display	Key operation
Mode name	Description		Front Key
Forced disc eject	Removing a disc that cannot be ejected. The tray will open and unit will shift to P-off mode. *When Timer REC is ON or EXT-LINK is ON, execute " Forced disc eject " after releasing Timer REC or EXT-LINK. *This command is not effective during "Child lock" is ON. While Demonstration Lock is being set, this Forced disc eject function is not accepted. If this command was executed while TIMER REC is being set, TIMER REC setting will be kept.	The display before execution leaves. ******	When the power is off, press [STOP] and [CH UP] keys simultaneously for 5 seconds.
Child lock/unlock	Set or release “Child Lock”.	X HOLD	Press [ENTER] and [RETURN] by remote controller simultaneously until [X-HOLD] is displayed.
NTSC/PAL system select	To switch PAL/NTSC altemately.	The display before execution leaves. ******	While the power is on (E-E mode), press [STOP] and [OPEN/CLOSE] simultaneously for 5 seconds.
Forced power-off	When the power button is not effective while power is ON, turn off the power forcibly. *When Timer REC is ON or EXT-LINK is ON, execute “Forced Power-off” after releasing Timer REC or EXT-LINK.	Display in P-off mode.	Press [Power] key over than 10 seconds.
Aging	Perform sequence of modes as * Aging Description shown below continually. **Caution:** **All programs in DVD-RAM disc will be deleted because Formatting is done once in Aging process.**	Display following the then mode.	When the power is ON, press [STOP], [POWER] and [OPEN/CLOSE] simultaneously for over 5 seconds and less than 10 seconds. **NOTE1:** If Unit has not turned into Aging mode by operations shown above, execute TEST MODE once and re-execute operation shown above. (*All the main unit’s parameters include tuner are initialized by TEST mode.) **NOTE2:** If the unit has hung-up because of pressing keys for over 10 seconds, once turn off the power, and re-execute this command. *When releasing Aging mode, press [POWER] key.

Aging Contents (Example):



*1 : REC (HDD) & PLAY (DVD) content of operation
HDD→REC, DVD→PLAY, CUE, REV, PLAY, PAUSE, SLOW, R-SLOW, PLAY, PROGRAM NAVI
*2 : REC (DVD) & PLAY (HDD) content of operation
DVD→REC, HDD→PLAY, CUE, REV, PLAY, PAUSE, SLOW, R-SLOW, PLAY, PROGRAM NAVI, TRAY OPEN/CLOSE
*3 : REC & PLAY (HDD)→REC (HDD) & PLAY (DVD) content of operation
HDD→REC & PLAY, DVD→PLAY, TRAY OPEN/CLOSE

Item		FL display	Key operation
Mode name	Description		Front Key
Demonstration lock/unlock	Ejection of the disc is prohibited. The lock setting is effective until unlocking the tray and not released by “Main unit initialization” of service mode.	*When lock the tray. LOCK “LOCK” is displayed for 3 seconds.	When the power is on, press [STOP] and [POWER] keys simultaneously for 5 seconds.
		*When unlock the tray. UNLOCK “UNLOCK” is displayed for 3 seconds.	When the power is on, press [STOP] and [POWER] keys simultaneously for 5 seconds.
		*When press OPEN/CLOSE key while the tray being locked. LOCK Display “LOCK” for 3 seconds.	Press [OPEN/CLOSE] key while the tray being locked.
ATP re-execution	Re-execute ATP.	Display at ATP executing. ******	When the power is on (E-E mode), press [CH UP] and [CH DOWN] simultaneously for 5 seconds.
Progressive initialization	The progressive setting is initialized to Interlace.	The display before execution leaves. ******	When the power is on (E-E mode), press [STOP] and [PLAY] simultaneously for 5 seconds.

8.1.3. Service Modes at a glance

Service mode setting: While the power is off, press **REC, CH UP and OPEN / CLOSE** simultaneously for five seconds.

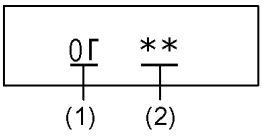
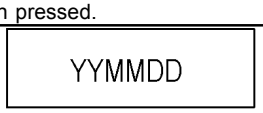
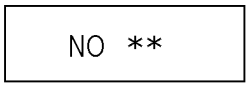
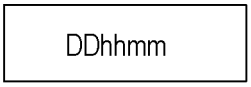
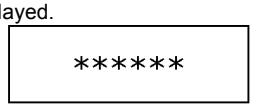
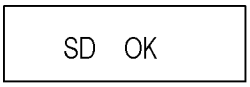
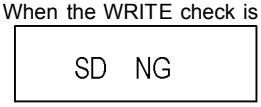
Item		FL display	Key operation
Mode name	Description		(Remote controller key)
Release Items	Item of Service Mode executing is cancelled.	SERV	Press [0] [0] or [Return] in service mode.
Error Code Display	Last Error Code of U/H/F held by Timer is displayed on FL. *Details are described in **“8.1.1. Self-Diagnosis Functions”.**	♣□□ *♣ shows U/H/F. □□ shows number. If any error history dose not exist, [F00] is displayed.	Press [0] [1] in service mode
ROM Version Display	1. Region code (displayed for 5 sec.) 2. Main firm version (displayed for 5 sec.) 3. Timer firm version (displayed for 5 sec.) 4. Drive firm version (displayed for 5 sec.) 5. ROM correction version (left displayed)	1. NO * 2. ****** 3. ****** 4. **** 5. *** ‘’ * ’’ are version displays.	Press [0] [2] in service mode

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
White Picture Output	White picture is output as component Output from AV Decoder. *White picture (Saturation rate : 100%) *It is enable to switch Interlace/Progressive by "I/P switch: [1] [4]"	*Initial mode is "Interlace". WHIT I	Press [1] [1] in service mode.
		Switch Interlace/Progressive WHIT	Press [1] [4] in White Picture Output mode. *I/P are switched alternately.
Magenta Picture Output	Magenta picture is output with Component Output from AV Decoder. *Magenta picture (Saturation rate: 100%) *It is enable to switch Interlace/Progressive by "I/P switch: [1] [4]"	*Initial mode is "Interlace". MAGE I	Press [1] [2] in service mode.
		Switch Interlace/Progressive MAGE	Press [1] [4] in Magenta Picture Output mode. *I/P are switched alternately.
RTSC Return in XP (A & V)	AV1 input signal is encoded (XP), decoded (XP) and output decoded signal to external without DISC recording and DISC playback.	Initial mode: EE2/ Interlace/ XP/ Audio 48kHz EE2	Press [1] [3] in service mode.
		Switch Interlace/Progressive EE2P48	Press [1] [4] in RTSC Return XP mode. *I/P are switched alternately.
		Audio 44.1 kHz/ 48 kHz Switch EE2P44	Press [2] [4] in RTSC Return XP mode. *48 kHz / 44.1 kHz are switched alternately.
I/P Switch	Switch Interlace and Progressive in EE mode. *Initial setting is "Interlace". *This command is effective during executing "White Picture Output", "Magenta Picture Output" and "RTSC Return in XP (A & V)" modes.	Initial mode is Interlace SERV P Switch Interlace/Progressive SERV I	Press [1] [4] in I/P Switch mode. *I/P are switched alternately.
Audio Mute (XTMUTE)	Check whether mute is applied normally by the timer microprocessor.	T MUTE	Press [2] [1] in service mode.
Audio Mute (XDMUTE)	Check whether mute is applied normally by the Digital P.C.B..	D MUTE	Press [2] [2] in service mode.
Audio Pattern Output	The audio pattern stored in the internal memory is output (Lch: 1kHz/-18dB) (Rch: 400Hz/-18dB) *Audio sound clock switching operation of DAC can be confirmed by sub command [2] [4].	Initial mode (Audio 48kHz) AU 48	Press [2] [3] in service mode.
		Audio 44.1kHz/48kHz switching AU 44	Press [2] [4] in Audio Pattern Output mode. *48 kHz / 44.1 kHz are switched alternately.

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
HDD READ inspection	Perform a complete read inspection of the HDD.	When the HDD is OK HDD OK If the HDD is defective HDD□○○ □ :**Judge of Forward rate.** *When normal (Forward rate is 35Mbps or more, and there is no HDD error):□is Space. *When Abnormal (Forward rate is less than 35Mbps or HDD error existing):□is X. ○○ :**Number of what have spent time for seeking is over 100ms.** *When normal:○○ are spaces. *When Abnormal: Display Number of what have spent time for seeking over 100ms. However, if the number is more than 100, display [XX]. We judge it is normal that the number is less than 4.	Press [3] [1] in service mode. *When canceling the checking mode while executing, do “forced power-off”. Method: Press the “POWER” button more than 10 seconds.
Laser Used Time Indiction	Check laser used time (hours) of drive.	＊ ●(*****) is the used time display in hour. ●Laser used time of DVD/ CD in Playback/Recording mode is counted.	Press [4] [1] in service mode.
Delete the Laser Used Time	Laser used time stored in the memory of the unit is deleted.	CLR	Press [9] [5] in service mode.

<table>
<tr><th colspan="2">Item</th><th rowspan="2">FL display</th><th rowspan="2">Key operation
(Remote controller key)</th></tr>
<tr><th>Mode name</th><th>Description</th></tr>
<tr><td>RAM Drive Last Error</td><td>RAM Drive error code display.
*For details about the drive error code, refer to the Service Manual for the specific RAM Drive.</td><td>1. Error Number is displayed for 5 seconds.
NO **
2. Time when the error has occurred is displayed for 5 seconds.
DDhhmm
DD: Day
hh: Hour
mm: Minute
3. Last Drive Error (1/2) is displayed for 5 seconds.
******
4. Last Drive Error (2/2) is displayed for 5 seconds.
******
5. Error occurring Disc type is displayed for 5 seconds.
******
6. Disc Maker ID is displayed for 5 seconds.
******
7. Factor of Drive Error occurring is left displayed
******</td><td>Press [4] [2] in service mode.
When “INFO******” is being displayed, past 19 error histories can be displayed by pressing [0] [1] - [1] [9]

In case that the maker cannot be identified, display is black out.</td></tr>
<tr><td>Delete the Last Drive Error</td><td>Delete the Last Drive Error information stored on the DVD RAM-Drive.</td><td>CLR</td><td>Press [9] [6] in service mode.</td></tr>
<tr><td>Laser power confirmation</td><td>Drive state is judged based on difference between laser power value at shipping and present laser power value.</td><td>CHK *
* is judgment result
<table><tr><th>*</th><th>Power value difference</th><th>Evaluation</th></tr><tr><td>0</td><td>1mW or less</td><td>Very good.</td></tr><tr><td>1</td><td>2mW or less</td><td>Good.</td></tr><tr><td>2</td><td>3mW or less</td><td>Bad.</td></tr><tr><td>3</td><td>4mW or more</td><td>Very bad.</td></tr></table>If DVD-RAM disc in not inserted, [NO DISC] is displayed.
If power value study was filed, [ERROR] is displayed.</td><td>1. Insert DVD-RAM disc into RAM Drive in service mode. (Other media are assumed to be non-correspondence.)
2. Press [4] [4].</td></tr>
<tr><td>Turn on all FL/LEDs</td><td>All segments of FL and all LEDs are turned on.</td><td>All segments are turned on.</td><td>Press [5] [1] in service mode.</td></tr>
<tr><td>PB HIGH Signal Output</td><td>8 pin of AV 1 Jack (PB HIGH terminal) is High (approx. 11V DC).</td><td>PB HI</td><td>Press [5] [2] in service mode.</td></tr>
<tr><td>PB MIDDLE Signal Output</td><td>8 pin of AV 1 Jack (PB HIGH terminal) is Middle (approx. 5.5V DC)</td><td>PB MID</td><td>Press [5] [3] in service mode.</td></tr>
</table>

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
Front connection inspection	Press all front keys and check the connection between Main P.C.B. and Front key Switches.	 (1) Each time a key is pressed, segment turned on increases one by one. (2) Total umber of keys that have been pressed.	Press [5] [4] in service mode.
Production Date Display	Display the date when the unit was produced.	 YY: Year MM: Month DD: Day	Press [6] [1] in service mode.
Display the accumlated working time	Display the accumulated unit´s working time.	(Indicating unit: Second)	Press [6] [4] in service mode.
Display the Error History	Display the Error History stored on the unit.	Display reason of error for 5 seconds.  01: Defect of Digital P.C.B. (AV DEC / MAIN CPU) 02: Defect of RAM Drive. 03: Defect of Disc. 04: Defect of Digital P.C.B. or Communication Error. 05: Defect of Digital P.C.B. (AV DEC / MAIN CPU) 06: Defect of HDD. Display the time when the error has occurred for 5 seconds.  DD: Day hh: Hour mm: Minute Accumulated working time till occuring of the error is left displayed.  (Indicating unit: Second)	Press [6] [5] in service mode. Then press [0] [1] ~ [1] [9], the past 19 error histories are displayed.
Delete the Error History	Delete Error History information stored on the unit.		Press [9] [7] in service mode.
SD card WRITE check	Delete Error History information stored on the unit.	When the WRITE check is OK.  When the WRITE check is NG.  ***Note:** The image stored in the SD card will be erased.	Insert a SD card to SD card slot, and press [7] [4] in service mode. *Insert SD card while the power is off. *Check for [CARD SD] display on the FL display and go on the procedure.

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
AV4(V)/AV1(RGB) I/O Setting	Set input to AV4 (V) and set output to AV1 (RGB) for I/O checking	PAL 01	Press [8] [0] in service mode.
AV2(Y/C)/AV1(V) I/O Setting	Set input to AV2 (Y/C) and set output to AV1 (V) for I/O checking	PAL 02	Press [8] [1] in service mode.
AV2(V)/AV1(Y/C) I/O Setting	Set input to AV2 (V) and set output to AV1 (Y/C) for I/O checking	PAL 03	Press [8] [2] in service mode.
AV2(RGB)/AV1(V) I/O Setting	Set input to AV2 (RGB) and set output to AV1 (V) for I/O checking	PAL 04	Press [8] [3] in service mode.
P50(H) Output	Timer Microprocessor IC7501-76 output High signal for AV1-pin 10 passing through inverter (approx. 0V DC at AV1-pin 10).	When OK. P50HOK When NG. P50HNG	Press [8] [4] in service mode.
P50(L) Output	Timer Microprocessor IC7501-76 output Low signal for AV1-pin 10 passing through inverter (approx. 4.4V DC at AV1-pin 10).	When OK. P50LOK When NG. P50LNG	Press [8] [5] in service mode.
Tray OPEN/CLOSE Test	The RAM drive tray is opened and closed repeatedly.	****** “*” is number of open/close cycle times.	Press [9] [1] in service mode *When releasing this mode, press the [POWER] button of Remote Controller more than 10 seconds.
Error code initialization	Initialization of the last error code held by timer (Write in F00)	CLR	Press [9] [8] in service mode.
Initialize Service	Last Drive Error, Error history and Error Codes stored on the unit are initialized to factory setting.	CLR	Press [9] [9] in service mode.
Finishing service mode	Release Service Mode.	Display in STOP (E-E) mode. ******	Press power button on the front panel or Remote controller in service mode.

9 Service Fixture & Tools

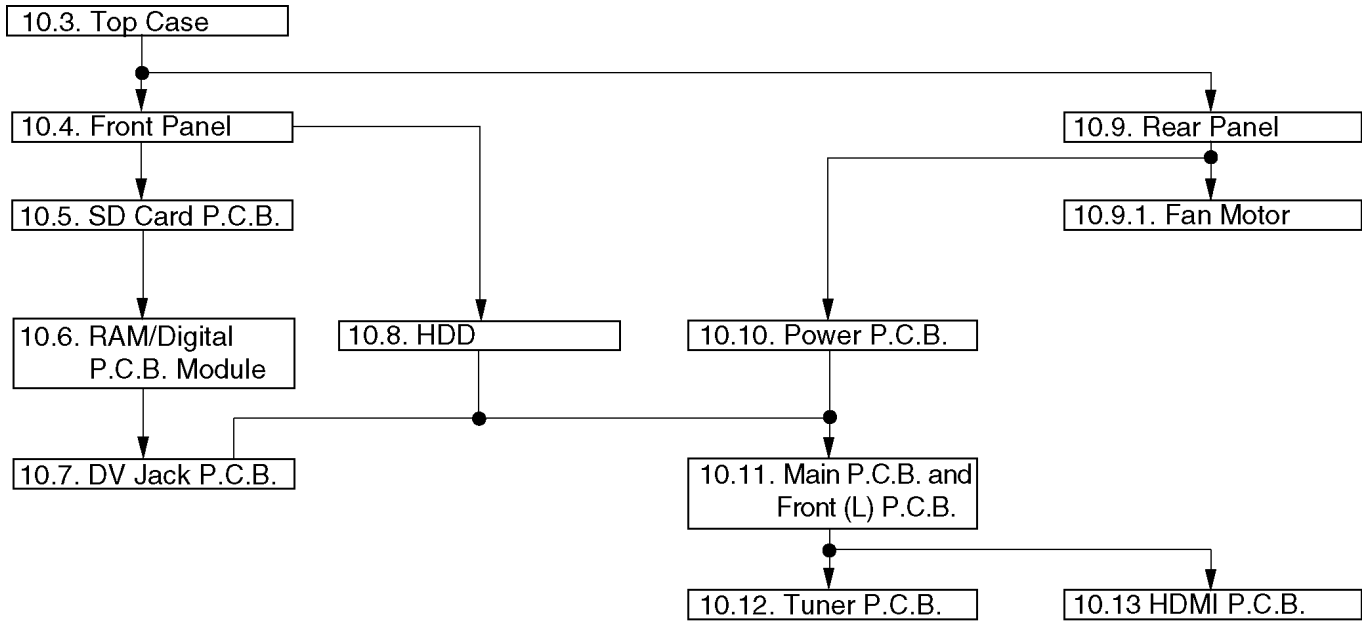
Part Number	Description	Compatibility
RFKZ0260	Extension Cable (MainP.C.B. - RAM/Digital P.C.B. Module/ 88 Pin)	Same as EH50 Series
RFKZ0216	Extension Cable (MainP.C.B. - Power P.C.B./ 23 Pin)	Same as E55 Series
RFKZ0366	Extension FFC (HDD - RAM/Digital P.C.B. Module/ 40 Pin)	New
RFKZ0168	Extension Cable (Power P.C.B. - Fan Motor/ 3 Pin)	Same as E50/ E55 Series
RFKZ0339	Extension Cable (MainP.C.B. - HDD / 4 Pin)	New
JZS0484	Eject Pin	Same as E50 Series
RFKZ03D01K	Lead Free Solder (0.3mm/100g Reel)	New
RFKZ06D01K	Lead Free Solder (0.6mm/100g Reel)	New
RFKZ10D01K	Lead Free Solder (1.0mm/100g Reel))	New
RFKZ0316	Solder Remover (Lead free 10W temperature Solder/180g)	New
RFKZ0328	Flux	New
RFKZ0329	Bottle of Flux	New

10 Disassembly and Assembly Instructions

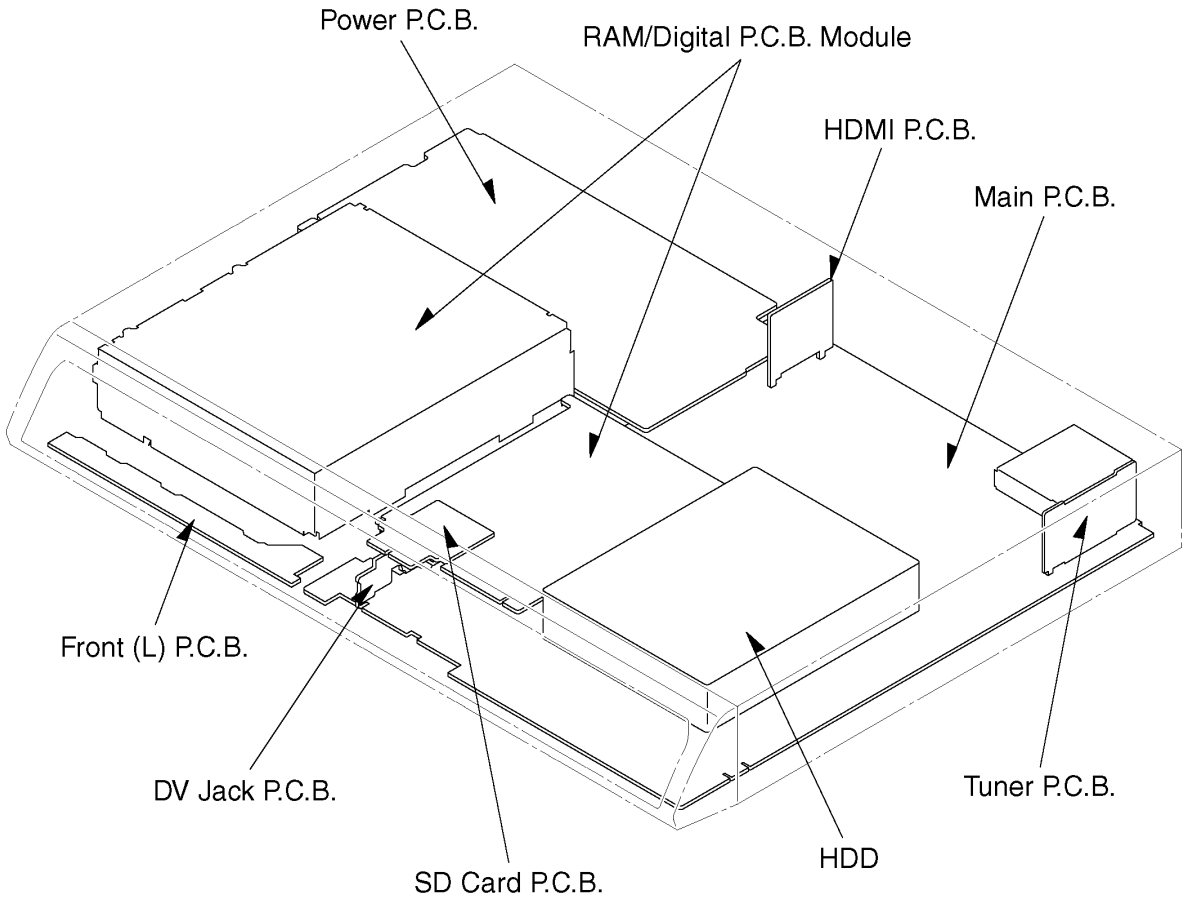
10.1. Disassembly Flow Chart

The following chart is the procedure for disassembling the casing and inside parts for internal inspection when carrying out the servicing.

To assemble the unit, reverse the steps shown in the chart below.

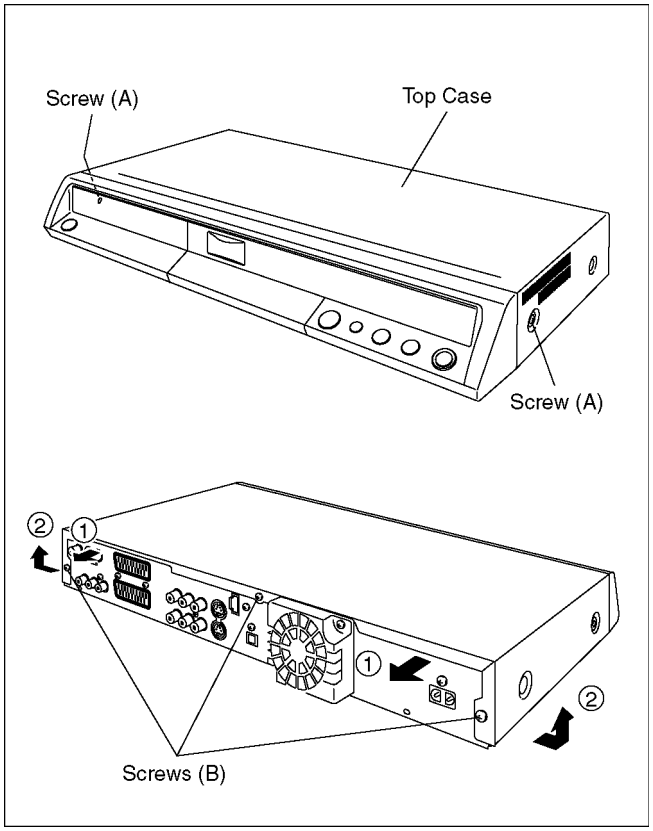


10.2. P.C.B. Positions



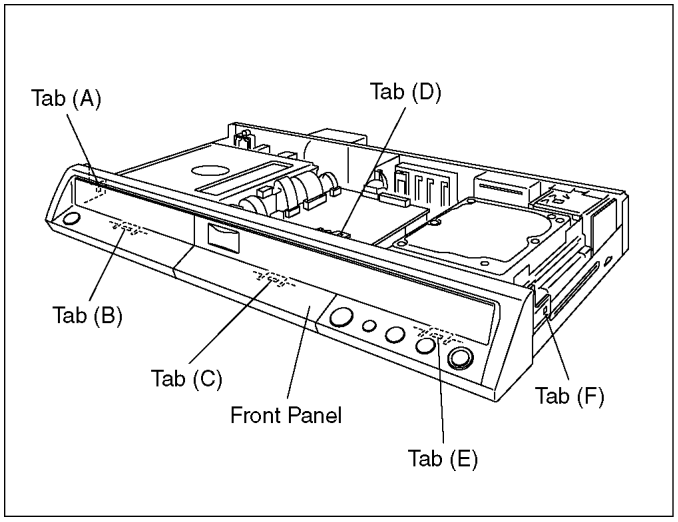
10.3. Top Case

1. Remove 2 screws (A) and 3 screws (B).
2. Slide Top Case rearward and open the both ends at rear side of the Top Case a little and lift the Top Case in the direction of the arrows.



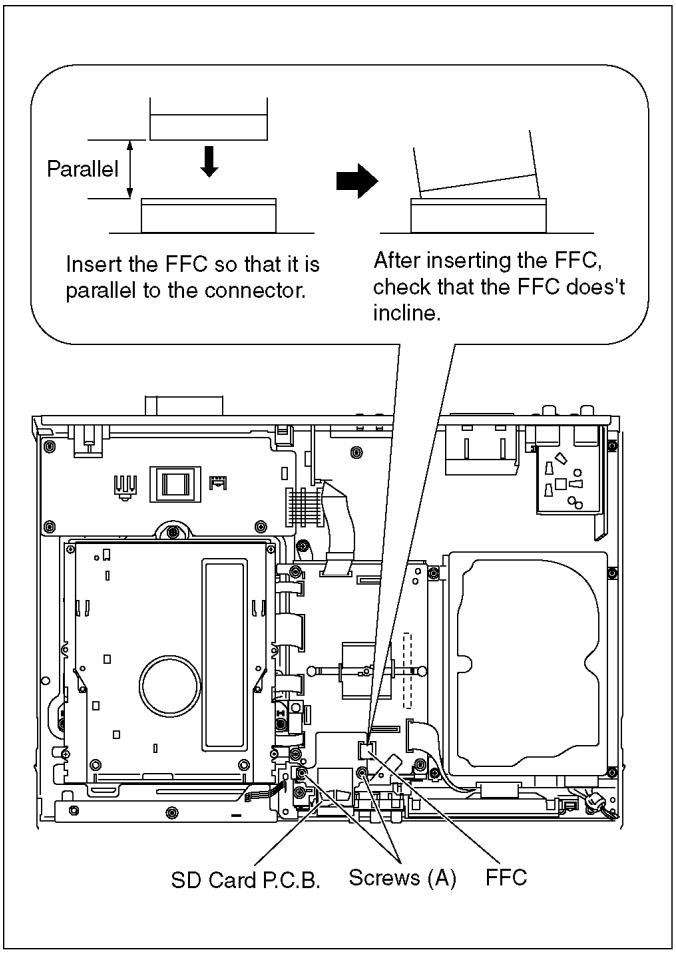
10.4. Front Panel

1. Unlock 6 tabs in (A) - (F) turn.
   Pull with the front panel in the direction of your side.



10.5. SD Card P.C.B.

1. Remove 1 FFC and 2 screws (A) to remove SD Card P.C.B..



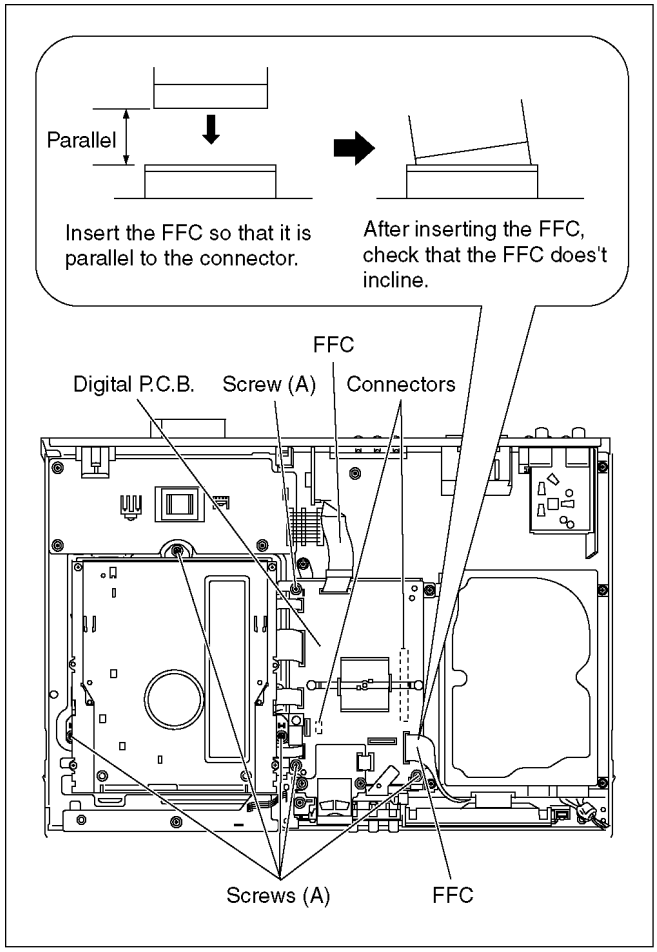
10.6. RAM/Digital P.C.B. Module

Caution:
Pairing of RAM Drive and Digital P.C.B. as "RAM/ Digital P.C.B. Module" have to be replaced together. If the pairing is changed, RAM Drive unit has to be re-aligned. Because the alignment data for RAM Drive Unit is stored in Digital P.C.B..

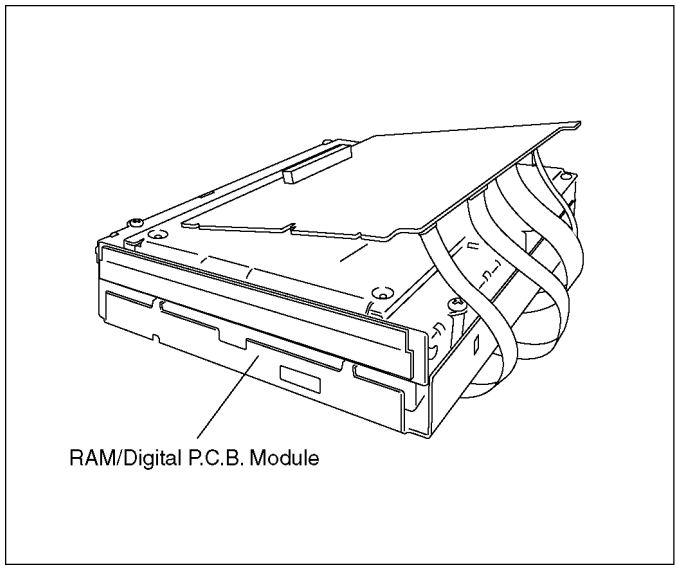
Note:
After replacing RAM/Digital P.C.B. Module, “TM AV1” is displayed on FL.

Once power off, and start-up again.

1. Remove 2 FFCs and 6 Screws (A).
2. Lift up Digital P.C.B. slightly so to disconnect Connectors to remove Digital P.C.B.



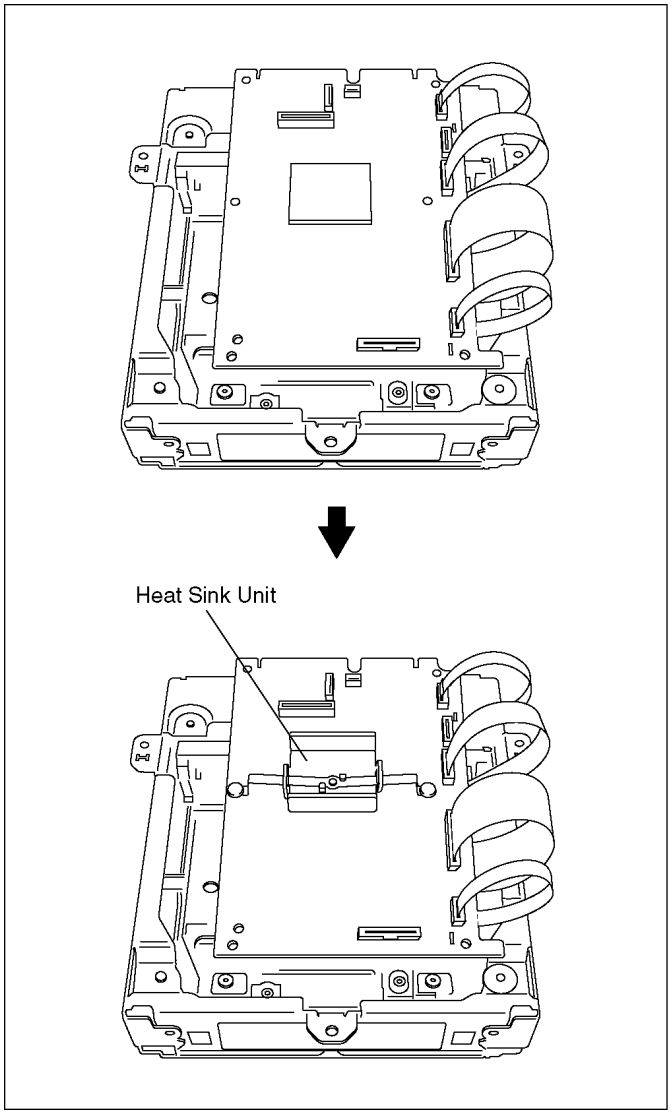
3. Put Digital P.C.B. on RAM Drive and remove RAM/Digital P.C.B. Module.



Note:

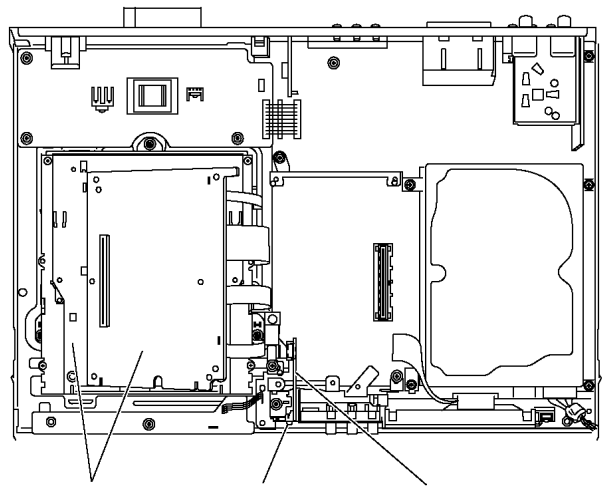
RAM/Digital P.C.B. Module as service part has no heat sink unit.

Before returning to customer, heat sink unit should be installed on Digital P.C.B..



10.7. DV Jack P.C.B.

1. Remove 1 Screw (A) to remove DV Jack P.C.B.



10.8. HDD

Caution:
Writing the main firmware to the unit is necessary after replacing the HDD.
Prepare the latest firmware updating disc.

* The main firmware is recorded in the HDD, but the replacement HDD has no data (and needs to be formatted).

Writing Procedure of Main Firm:

Caution:
(1) Writing of Main Firm needs 3, 4 minutes.
(2) Never cut the power of DVD Recorder until writing in Firmware ends.
(3) Initial settings and contents of reservation will not change if writing is normally completed.

1. Prepare latest firmware updating disc.
2. Replace HDD.
3. Turn on power of DVD Recorder.
4. After [PLEASE WAIT] is displayed on FL., [HDD ERR] is displayed on FL.
5. Tray opens automatically.
6. Insert updating disc for Firmware and press OPEN/CLOSE key.
   (If a wrong disc was inserted, [NG DISK] [NO FVU] is displayed on FL.)
7. [LOAD]→[LD FVU]⇔[M_FIRM] are displayed on FL alternately.
8. [MAIN]⇔[UPD OK] blink alternately and Tray opens.
   Take out disc (Writing was finished).
9. Press Power button to turn off power.
10. Press Power button to turn on power.
11. [HELLO]→[SELF CHECK] are displayed on FL.
12. [UNFORMAT] is displayed on FL.
13. After [UNFORMAT] was displayed, message to request FORMAT is displayed on TV screen.
14. Select [Yes] and press [ENTER] key to format HDD.
    (After FORMAT, program in HDD will be lost, but Main firm will not be lost.)

"Write of the main firm" is completed above.

* Drive firm is not updated by above operation. If you wish update Drive firm, please prepare the disc for latest firmware update, and write it again.
* If the version of the firm you have prepared was same as or later than that has already been written in deck, 'UNSUPPORT' is displayed on FL.
* In a usual updating of firmware, writing is not performed when the timer reservation standby was not released.

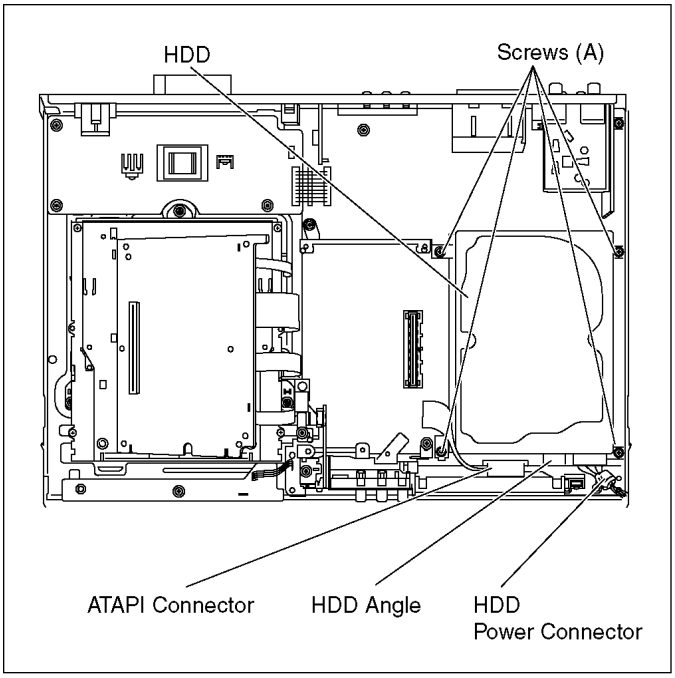
Handling of HDD

The following precautions should be taken when handling HDD.

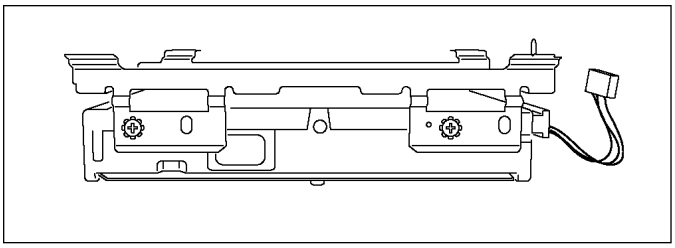
a. Never give an impact to HDD. (Even a drop from 1cm height can be a cause of HDD failure.
b. When placing HDD on a workbench, provide a mat on a bench for shock absorption and anti-static purposes.
c. When installing HDD, release it from your hands only after confirming that it is fully set on the chassis.
d. Avoid stacking up HDD.
e. HDD is unstable and easy to fall. Do not stand it on its side face.
f. When handling HDD, hold its side faces to avoid static hazard.
g. Do not place HDD on its wrapping bag after removal. (Prevention of static hazard
h. Use a screwdriver with low impact and anti-static features.

Note:
When replacing HDD, please make the rear jumper slave or cable select configuration.

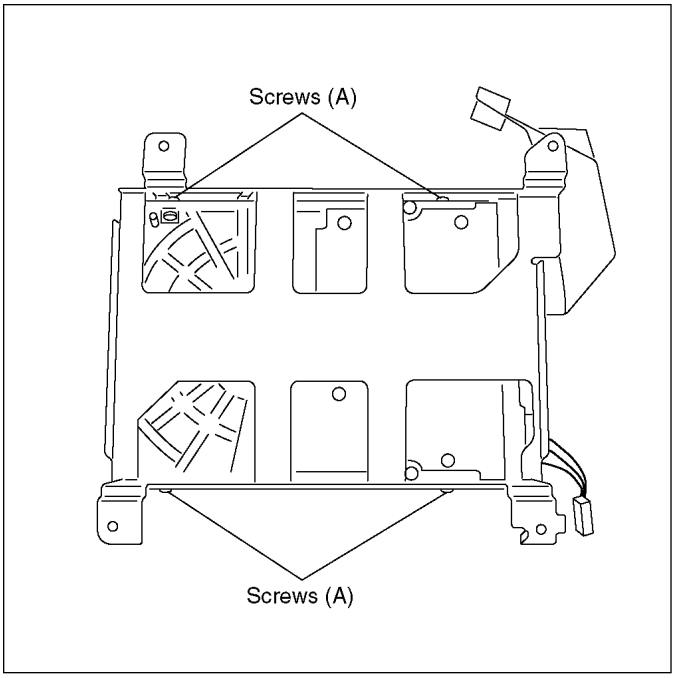
1. Remove ATAPI Connector and HDD Power Connector.
2. Remove 4 Screws (A) to remove HDD Angle with HDD.



3. Put HDD with HDD Angle up and down inversely so as not to give a shock to HDD.

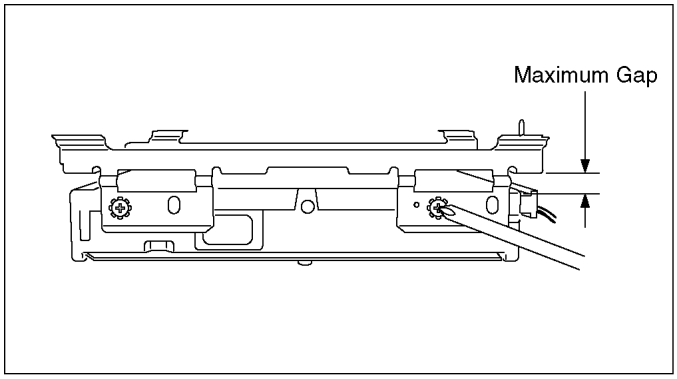


4. Remove 4 screws (A) remove HDD.



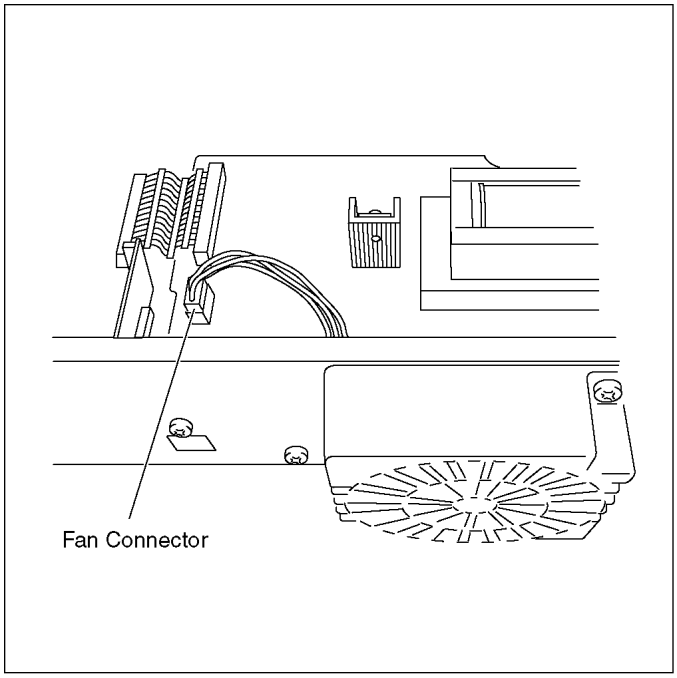
Caution for Attaching HDD

Put HDD up and down inversely so as not to give a shock to HDD, and put HDD Angle on to HDD and tighten 4 screws while lifting HDD Angle so as to keep maximum gap between HDD and HDD Angle.

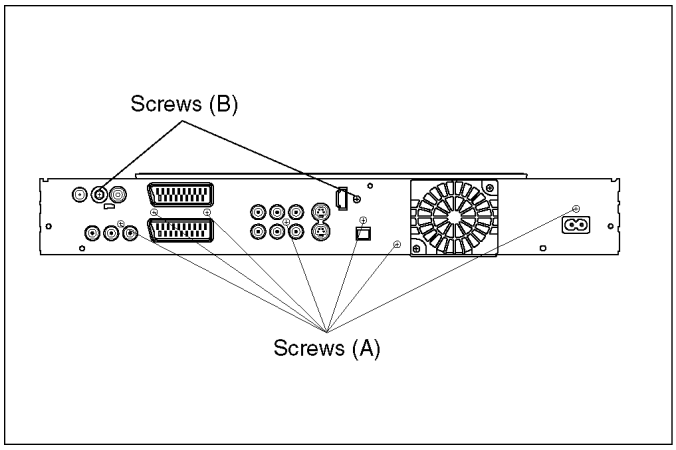


10.9. Rear Panel

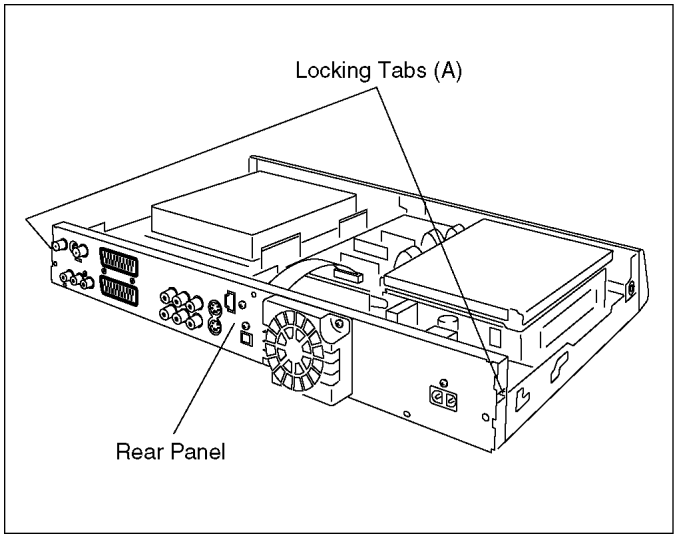
1. Disconnect Fan Connector.



2. Remove 7 Screws (A) and 2 Screws (B).

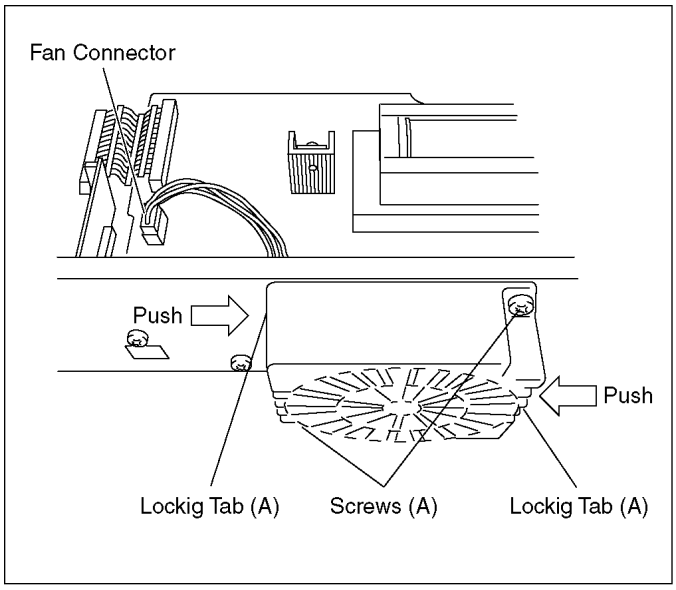


3. Unlock 2 Locking Tabs (A) to remove Rear Panel.



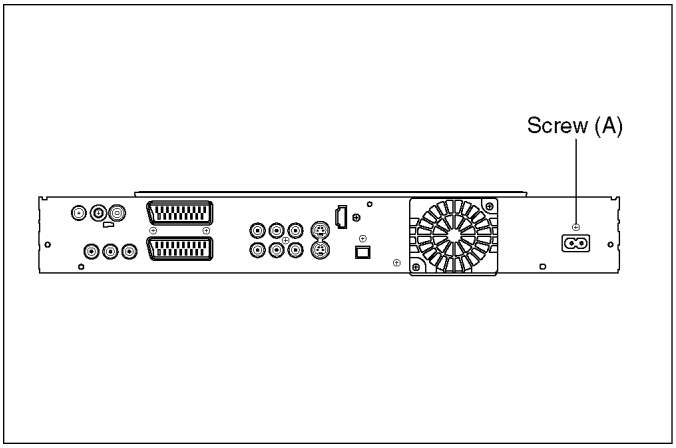
10.9.1. Fan Motor

1. Disconnect Fan Connector and remove 2 Screws (A).
2. Push and unlock 2 Locking Tabs (A) to remove Fan Motor.

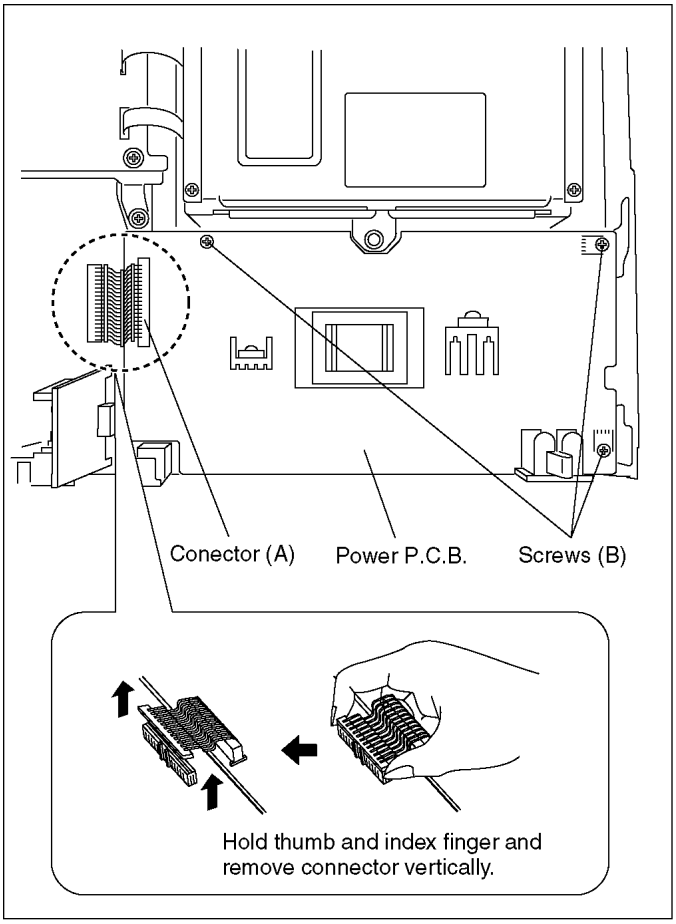


10.10. Power P.C.B.

1. Remove 1 Screw (A).



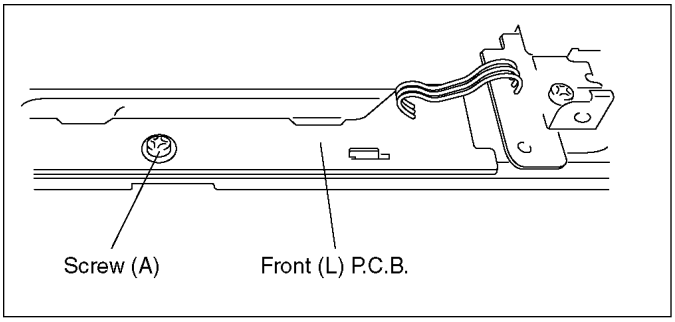
2. Remove 3 Screws (B) and disconnect Connector (A) to remove Power P.C.B..



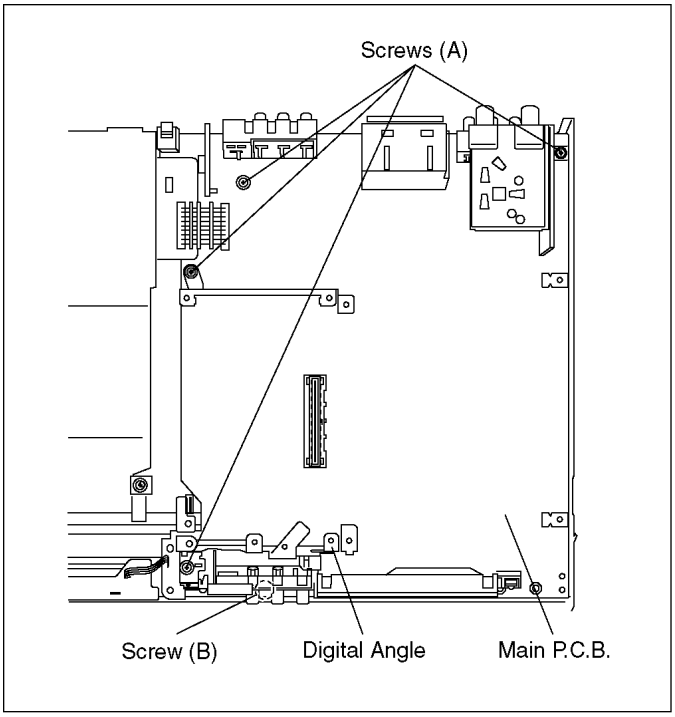
10.11. Main P.C.B. and Front (L) P.C.B.

When replacing Main P.C.B. or EEPROM, "UNFORMAT" indication is displayed and HDD must be formatted.
After that, programme in the HDD will be lost.

1. Remove 1 Screw (A).

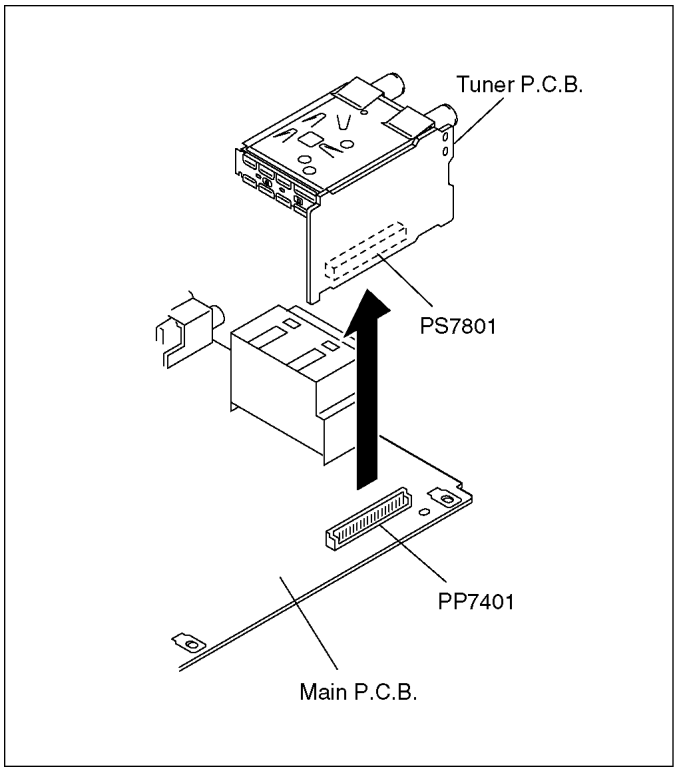


2. Remove 4 Screws (A) and 1 Screw (B).
3. Remove Digital Angle to remove Main P.C.B. and Front (L) P.C.B..



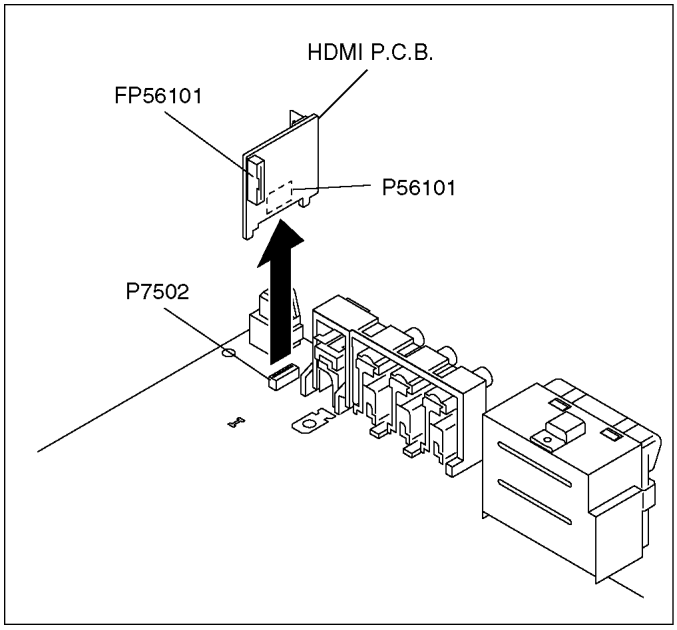
10.12. Tuner P.C.B.

1. Pull out the Tuner P.C.B. in the direction of the arrow.



10.13. HDMI P.C.B.

1. Pull out the HDMI P.C.B. in the direction of the arrow.



11 Measurements and Adjustments

11.1. Service Positions

Note:

For description of the disassembling procedure, see the section 10.

11.1.1. Checking and Repairing of Power P.C.B.

1. Top Case

Remove 2 Screws (A) on side

Remove 3 rear Screws (B) on rear

Remove Top Case

2. Power P.C.B.

Remove 1 Screw (A) for AC Inlet fixing

Remove 3 Screws (B) for Power P.C.B.fixing

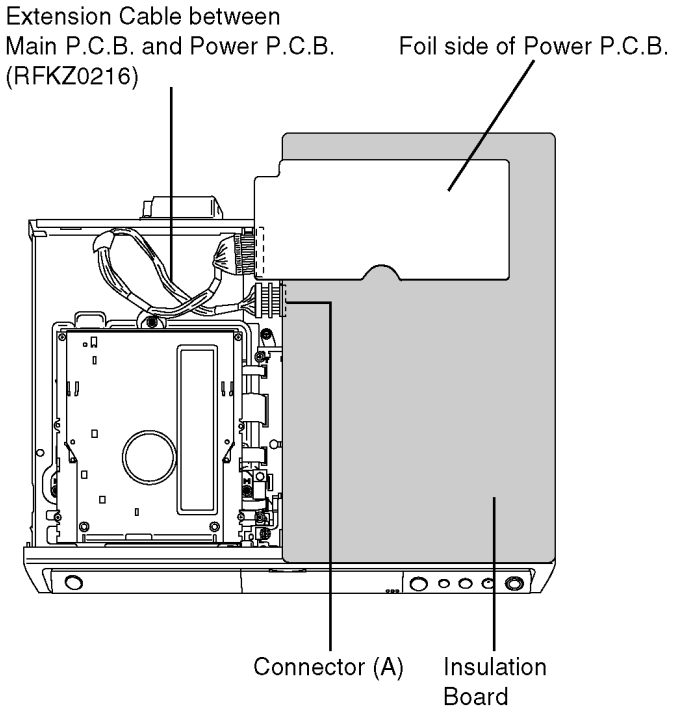
Remove Connector (A) to Main P.C.B.

Connect Extension Cable between Main P.C.B. and Power P.C.B. (RFKZ0216).

Put Power P.C.B. on Insulation Board so that it's foil side faces top.

Caution:

Red wire in the extension cable should be connected to (1) pin.



11.1.2. Checking and Repairing of RAM / Digital P.C.B. Module

1. Top Case

- Remove 2 Screws (A) on side
- Remove 3 rear Screws (B) on rear
- Remove Top Case

2. Front Panel

- Unlock 1 Locking Tab on upper
- Unlock 2 Locking Tabs on side
- Unlock 3 Locking Tabs on bottom
- Remove Front Panel

3. SD Card P.C.B.

- Remove 2 Screws fixing SD Card P.C.B.
- Remove 1 FFC from Digital P.C.B.
- Remove SD Card P.C.B.

4. RAM/Digital P.C.B. Module

- Remove 6 Screws (A) fixing RAM/Digital P.C.B. Module
- Remove 2 FFCs from HDD and HDMI P.C.B.
- Lift up Digital P.C.B. to remove it

5. DV Jack P.C.B.

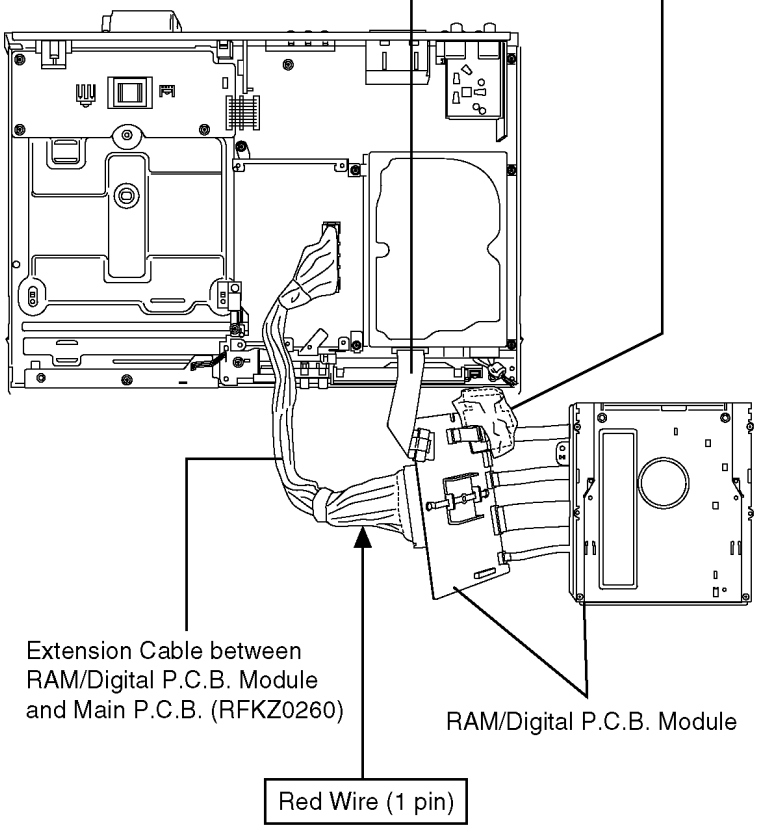
- Remove 1 Screw (A) fixing DV Jack P.C.B.
- Remove DV Jack P.C.B.

Attach DV Jack P.C.B. on to Digital P.C.B.. SD Card P.C.B. is wrapped with insulation sheet. Connecting to Digital P.C.B. with original FFC.
Put RAM/Digital P.C.B. Module on side.

Connect Extension Cable between HDD and RAM/Digital P.C.B. Module (RFKZ0366), and between Main P.C.B. and RAM/Digital P.C.B. Module (RFKZ0260).

Caution:
Red wire in the extension cable should be connected to (1) pin.

Note:
SD Card P.C.B. is wrapped with insulation sheet.



11.1.3. Checking and Repairing of Main P.C.B.

1. Top Case

- Remove 2 Screws (A) on side
- Remove 3 rear Screws (B) on rear
- Remove Top Case

2. Front Panel

- Unlock 1 Locking Tab on upper
- Unlock 2 Locking Tabs on side
- Unlock 3 Locking Tabs on bottom
- Remove Front Panel

3. SD Card P.C.B.

- Remove 2 Screws (A) fixing SD Card P.C.B.
- Remove 1 FFC from Digital P.C.B.
- Remove SD Card P.C.B.

4. RAM/Digital P.C.B. Module

- Remove 6 Screws (A) fixing RAM/Digital P.C.B. Module
- Remove 2 FFCs from HDD and HDMI P.C.B.
- Lift up Digital P.C.B. to remove it

5. DV Jack P.C.B.

- Remove 1 Screw (A) fixing DV Jack P.C.B.
- Remove DV Jack P.C.B.

5. HDD

- Remove 4Pin Power Cable from HDD
- Remove 4 Screws (A) fixing HDD Angle to remove it with HDD

7. Rear Panel

- Disconnect Fan Connector
- Remove 9 Screws (one is for Tuner)
- Unlock 2 Locking Tabs on side
- Remove Rear Panel

8. Power P.C.B.

- Remove 1 Screw (A) fixing AC Inlet
- Remove 3 Screw (B) fixing Power P.C.B.
- Remove Connector (A) to Main P.C.B.

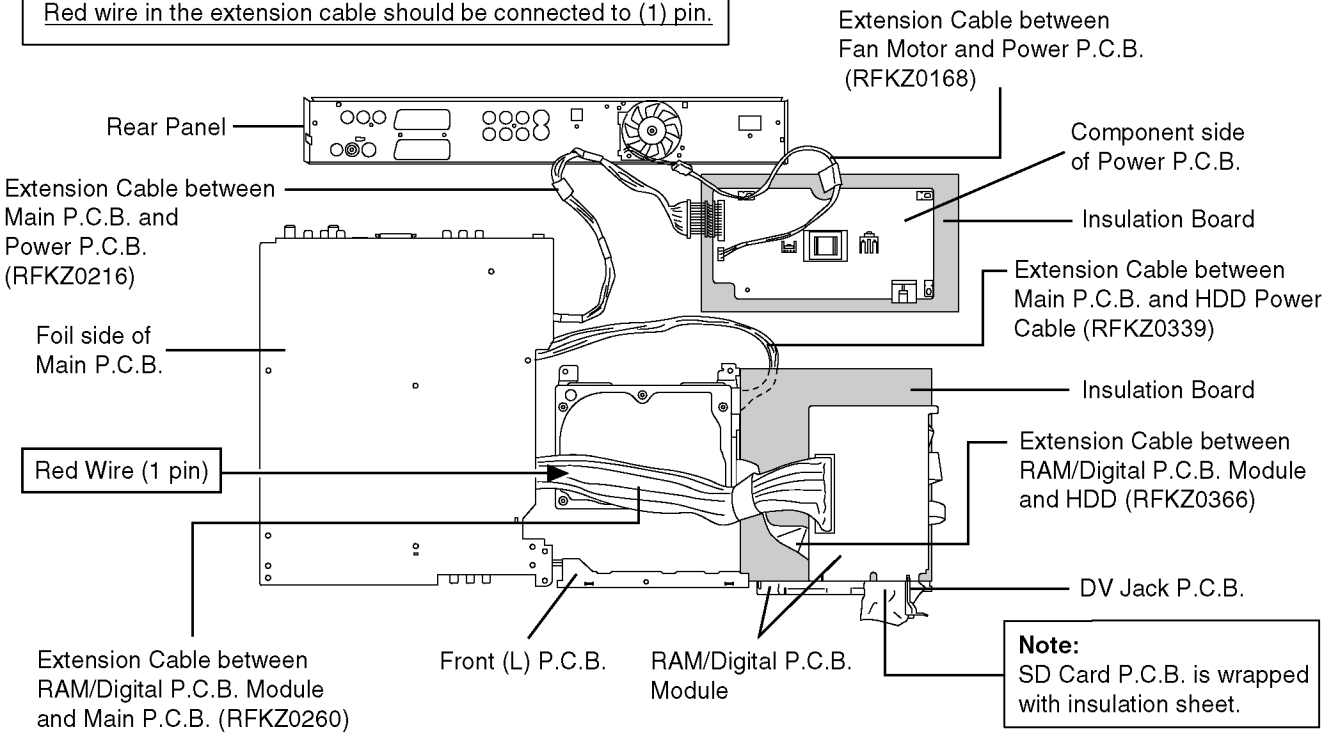
9. Front (L) P.C.B. and Main P.C.B.

- Remove 1 Screw to remove Front (L) P.C.B.
- Remove 5 Screws to remove Main P.C.B. (one is for Front Jack)

SD Card P.C.B. is wrapped with insulation sheet.
Connecting to Digital P.C.B. with original FFC.
Attach DV Jack P.C.B. to Digital P.C.B..
Remove Power P.C.B. from Chassis,and put Power P.C.B. so that it's component side faces top.
Remove Front (L) and Main P.C.B. from Chassis,and put Front (L) and Main P.C.B. so that it's foil side faces top.
Put Insulation Board on DVD Drive, then place Digital P.C.B. on Insulation Board.

Connect Extension Cable between Main P.C.B. and RAM/Digital P.C.B. Module (RFKZ0260), and between Main P.C.B. and Power P.C.B. (RFKZ0216), and between HDD Power Cable and Main P.C.B. (RFKZ0339), and between HDD and RAM/Digital P.C.B. Module (RFKZ0366), and between Fan Motor and Power P.C.B. (RFKZ0168).

Caution:
Red wire in the extension cable should be connected to (1) pin.



11.1.4. Checking and Repairing of HDD

1. Top Case

Remove 2 Screws (A) on side

Remove 3 rear Screws (B) on rear

Remove Top Case

2. HDD

Remove 1 FFC from Digital P.C.B.

Remove 4 Pin Power Cablefrom Main P.C.B.

Remove 4 Screws (A) to remove HDD Angle with HDD

Connect HDD ATAPI Connector to Replacement HDD

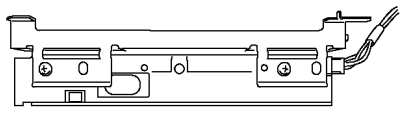
Connect 4 Pin Power Cable to Replacement HDD

Put Replacement HDD on Insulation Board.

Connect Extension Cable between Replacement HDD and RAM/Digital P.C.B. Module (RFKZ0366),and between Replacement HDD and Main P.C.B. (RFKZ0339).

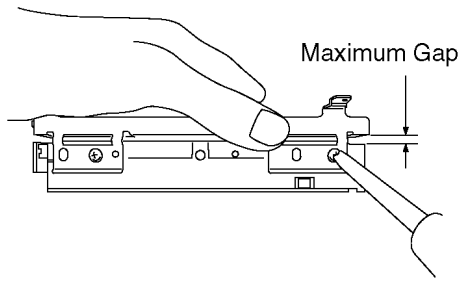
Caution for Removing HDD

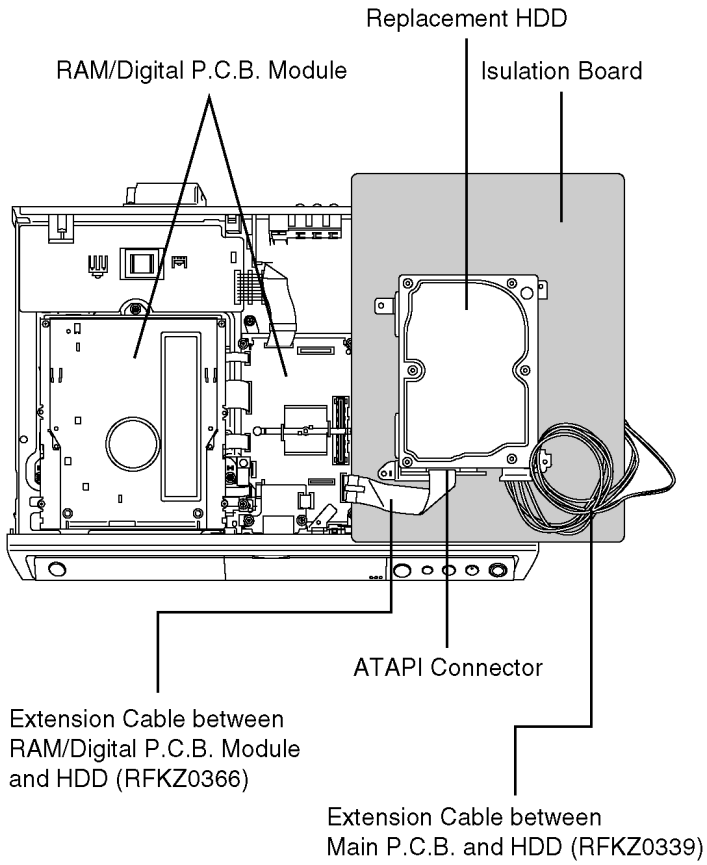
Put HDD with HDD Angle up and down inversely and remove 4 screws to remove HDD so as not to give a shock to HDD.



Caution for Attaching HDD

Put HDD up and down inversely, and put HDD Angle on to HDD and tighten 4 screws while lifting HDD Angle so as to keep maximum gap between HDD and HDD Angle.





11.2. Caution for Replacing Parts

11.2.1. Items that should be done after replacing parts

√ :Necessary — :Unnecessary

Items that Should be done / Replacing Parts	Reset IC7501 (*Note1)	Obtain and register a new registration code.(*Note2)	Main Firm update(*Note3)	HDD Format
Main P.C.B.	√	√	—	√
IC7501 (Timer IC)	√	—	—	—
IC7404 (EEPROM)	—	√	—	√
HDD	—	—	√	√

*Note1:

Resetting Method

Reset object	Condition of power	Short Terminal
IC7501 (Timer IC)	POWER ON	IC7502-4 (RESET_L) and GND

*Note2:

Please will always pass the customer "Warning for Customers Who Use the DivX Video-on-Demand content." with the product and get it when you unavoidably exchange EEPROM or P.C.B. including EEPROM (When the product is exchanged, it is the same.).

You must use print attached to service part (EEPROM or P.C.B. including EEPROM) or must use copy of print below as "Warning for Customers who use the DivX Video-on-Demand content."

Information needed without fail for the customer for whom it is used continuing DivX Video-on-Demand Service to "Manual for the customer" is recorded.

Appendix:

* Parts that memorize user's information are only EEPROM.
* The registration of Registration Code is possible for half a year up to 6 recorders up to 10 recorders a year. Replacement of EEPROM or P.C.B. including EEPROM spends one of this.

Registration Code is memorized in EEPROM (RFKFxxxxxx).
Model without VHS: Main P.C.B.
Model with VHS: Digital I/F P.C.B. (Power & DVD I/F/P.C.B.)
If exchange above P.C.B. or EEPROM, new registration Code differ from previous Registration Code will be generated. In this case if your customer uses DivX Video-on-Demand service, he/she will no longer be able to play any content that he/she purchased under that same registration code.
Therefore your customer will need to obtain and register the new registration code.

*Copy this page and cut on the dotted line and give the lower half to your customer.

Warning for Customers who use the DivX Video-on-Demand content.

1. The registration code has been changed for the repair of the product or the product exchange.
2. Obtain and register a new registration code, otherwise you will no longer be able to play DivX Video-on-Demand content.
3. Follow the procedure on the DivX Video-on-Demand web site to register at http://vod.divx.com/

* If you do not use the DivX Video-on-Demand content, please ignore this warning.

Note3:

Please prepare latest firmware updating disc.

* Main Firm is being recorded in HDD, but new HDD has no data.

Writing Procedure of Main Firm:

<<Caution>>

(1) Writing of Main Firm needs 3, 4 minutes.

(2) Never cut the power of DVD Recorder until writing in Firmware ends.

(3) Initial settings and contents of reservation will not change if writing is normally completed.

1. Prepare updating disc for firm ware.
2. Replace HDD.
3. Turn on power of DVD Recorder.
4. After [PLEASE WAIT] is displayed on FL., [HDD ERR] is displayed on FL.
5. Tray opens automatically.
6. Insert updating disc for Firmware and press OPEN/CLOSE key. (If a wrong disc was inserted, [NG DISK] [NO FVU] is displayed on FL.)
7. [LOAD] → [LD FVU] ←→ [M_FIRM] are displayed on FL alternately.
8. [MAIN] ←→ [UPD OK] blink alternately and Tray opens. Take out disc (Writing was finished).
9. Press Power button to turn off power.
10. Press Power button to turn on power.
11. [HELLO] → [SELF CHECK] are displayed on FL.
12. [UNFORMAT] is displayed on FL.
13. After [UNFORMAT] was displayed, message to request FORMAT is displayed on TV screen.
14. Select [Yes] and press [ENTER] key to format HDD.

(After FORMAT, program in HDD will be lost, but Main firm will not be lost.

“Write of the main farm" is completed above.

* Drive firm is not updated by above operation. If you wish update Drive firm, please prepare the disc for latest firmware update, and write it again.

* If the version of the firm you have prepared was same as or later than that has already been written in deck, ´UNSUPPORT´ is displayed on FL.

* In a usual updating of firmware, writing is not performed when the timer reservation standby was not released.

11.2.2. Notice after replacing RAM/Digital P.C.B. Module

After replacing RAM/Digital P.C.B. Module, “TM AV1” is displayed on FL.

Once power off, and start-up again.

11.3. Standard Inspection Specifications after Making Repairs

After making repairs, we recommend performing the following inspection, to check normal operation.

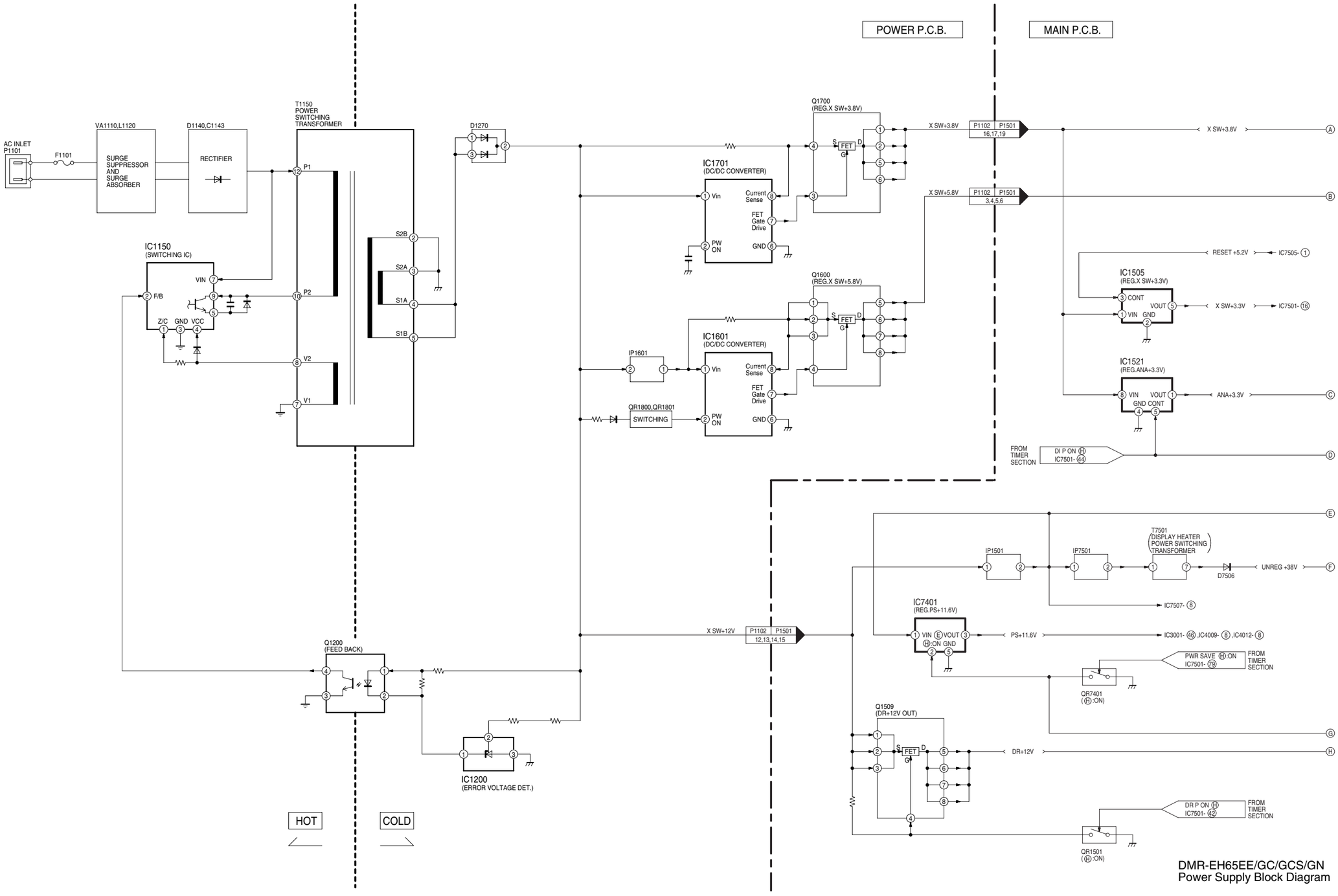
No.	Procedure	Item to Check
1	Turn on the power, and confirm items pointed out.	Items pointed out should reappear.
2	Insert RAM disc.	The Panasonic RAM disc should be recognized.
3	Enter the EE (TU IN / AV IN - AV OUT) mode.	No abnormality should be seen in the picture, sound or operation.
4	Perform auto recording and playback for one minute using the RAM disc.	No abnormality should be seen in the picture, sound or operation. *Panasonic DVD-RAM disc should be used when recording and playback.
5	Model with the HDD: Perform auto recording and playback for one minute using the HDD.	No abnormality should be seen in the picture, sound or operation.
6	If a problem is caused by a VCD, DVD-R, DVD-Video, Audio-CD, or MP3, playback the test disc.	No abnormality should be seen in the picture, sound or operation.
7	Models with SD Card Slot or DV Input Jack: In case of that the trouble is caused by SD card and/or DV terminal.	Models with SD Card or DV Input Jack; 1) SD Card: Check to be able to display and copy the picture. 2) DV terminal: Check to be able to record from DVC.
8	After checking and making repairs, upgrade the firmware to the latest version.	Make sure that [FIRM_SUCCESS] appears in the FL displays. *[UNSUPPORT] display means the unit is already updated to newest same version. Then version up is not necessary.
9	Transfer [9][9] in the service mode setting, and initialize the service settings (return various settings and error information to their default values. The laser time is not included in this initialization).	Make sure that [CLR] appears in the FL display. After checking it, turn the power off.

Use the following checklist to establish the judgement criteria for the picture and sound.

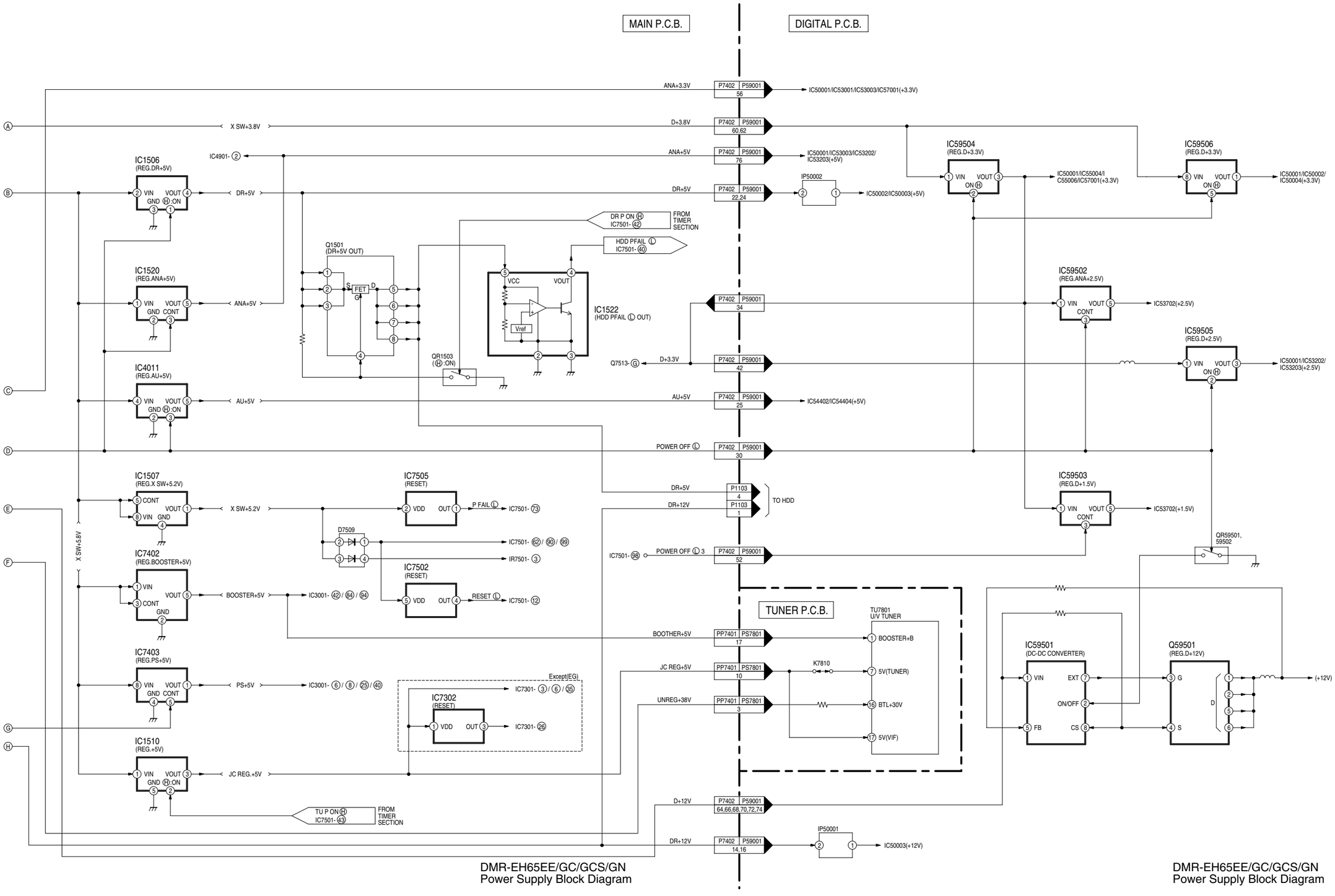
Item	Contents	Check	Item	Contents	Check
Picture	Block noise		Sound	Distorted sound	
	Crosscut noise			Noise (static, background noise, etc.)	
	Dot noise			The sound level is too low.	
	Picture disruption			The sound level is too high.	
	Not bright enough			The sound level changes.	
	Too bright				
	Flickering color				
	Color fading				

12 Block Diagram

12.1. Power Supply Block Diagram



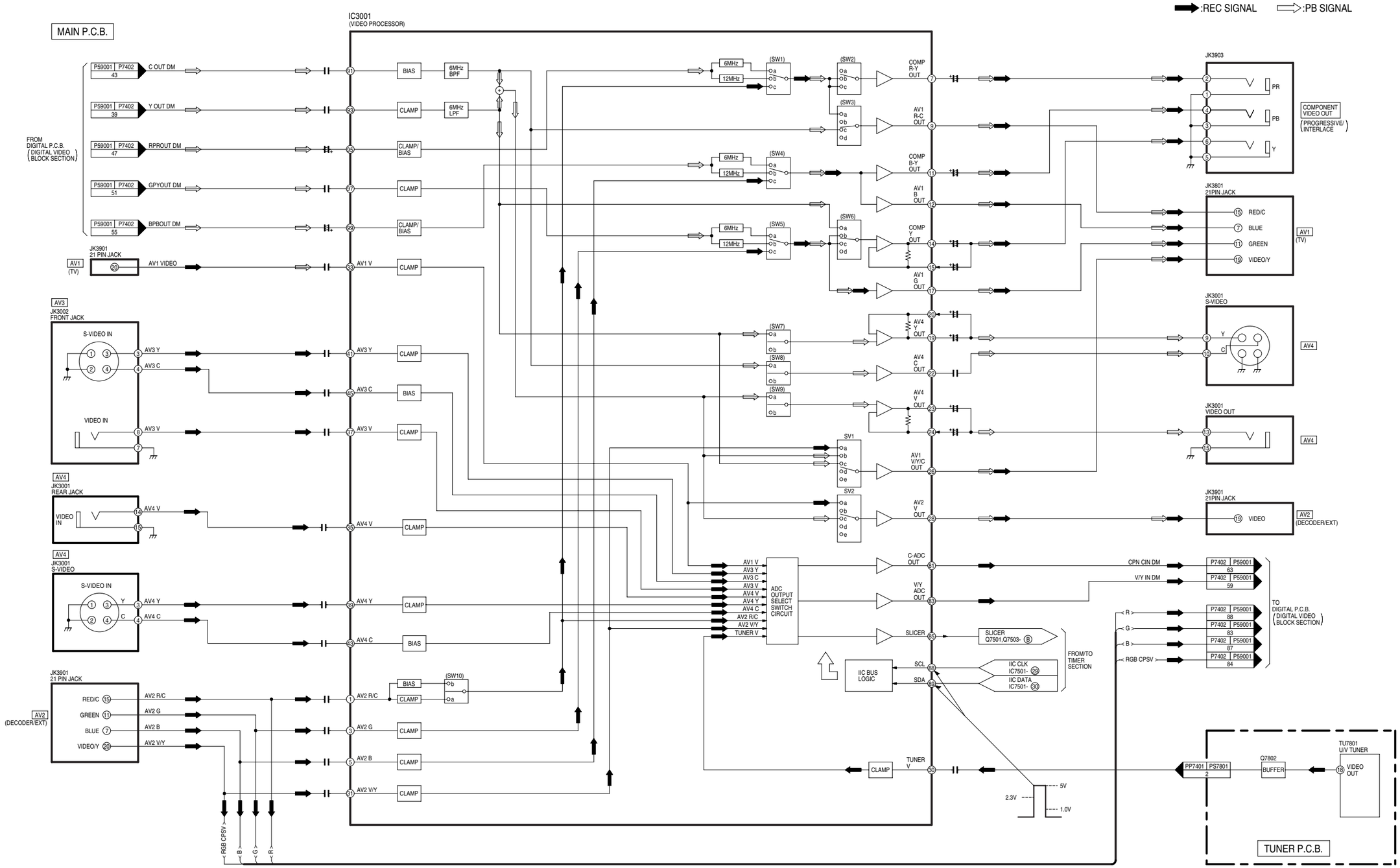
DMR-EH65EE/GC/GCS/GN
Power Supply Block Diagram



DMR-EH65EE/GC/GCS/GN
Power Supply Block Diagram

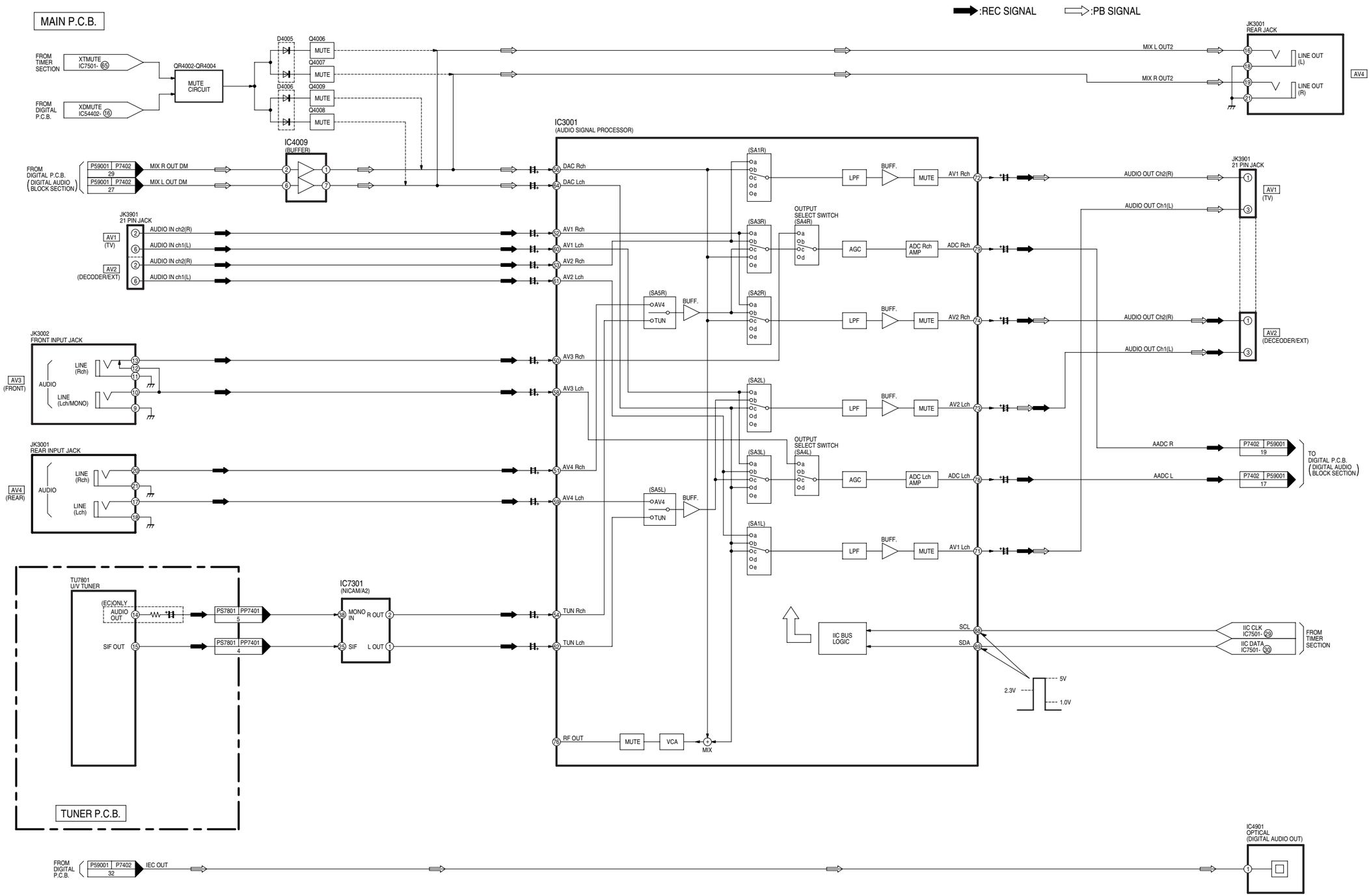
DMR-EH65EE/GC/GCS/GN
Power Supply Block Diagram

12.2. Analog Video Block Diagram



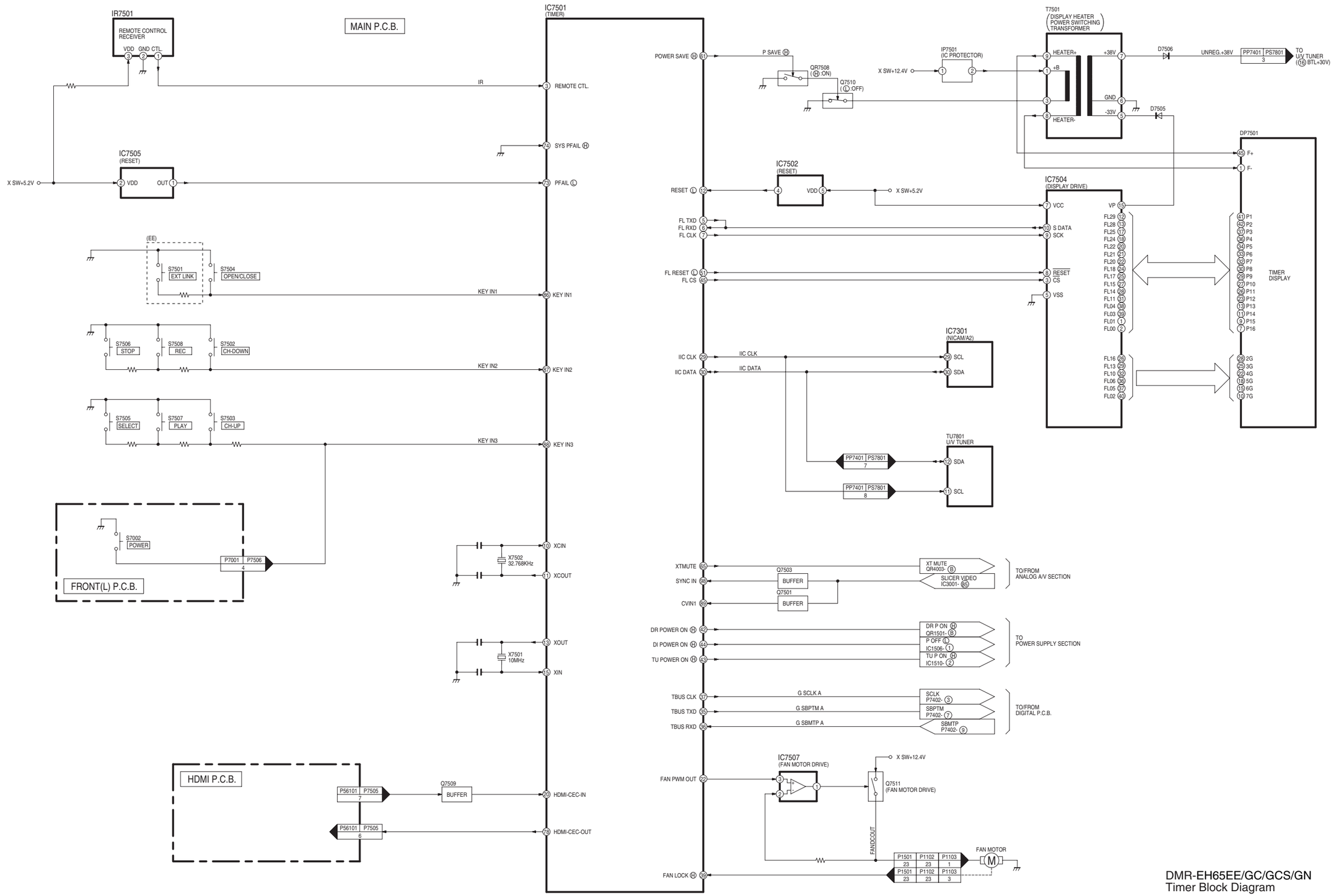
DMR-EH65EE/GC/GCS/GN
Analog Video Block Diagram

12.3. Analog Audio Block Diagram



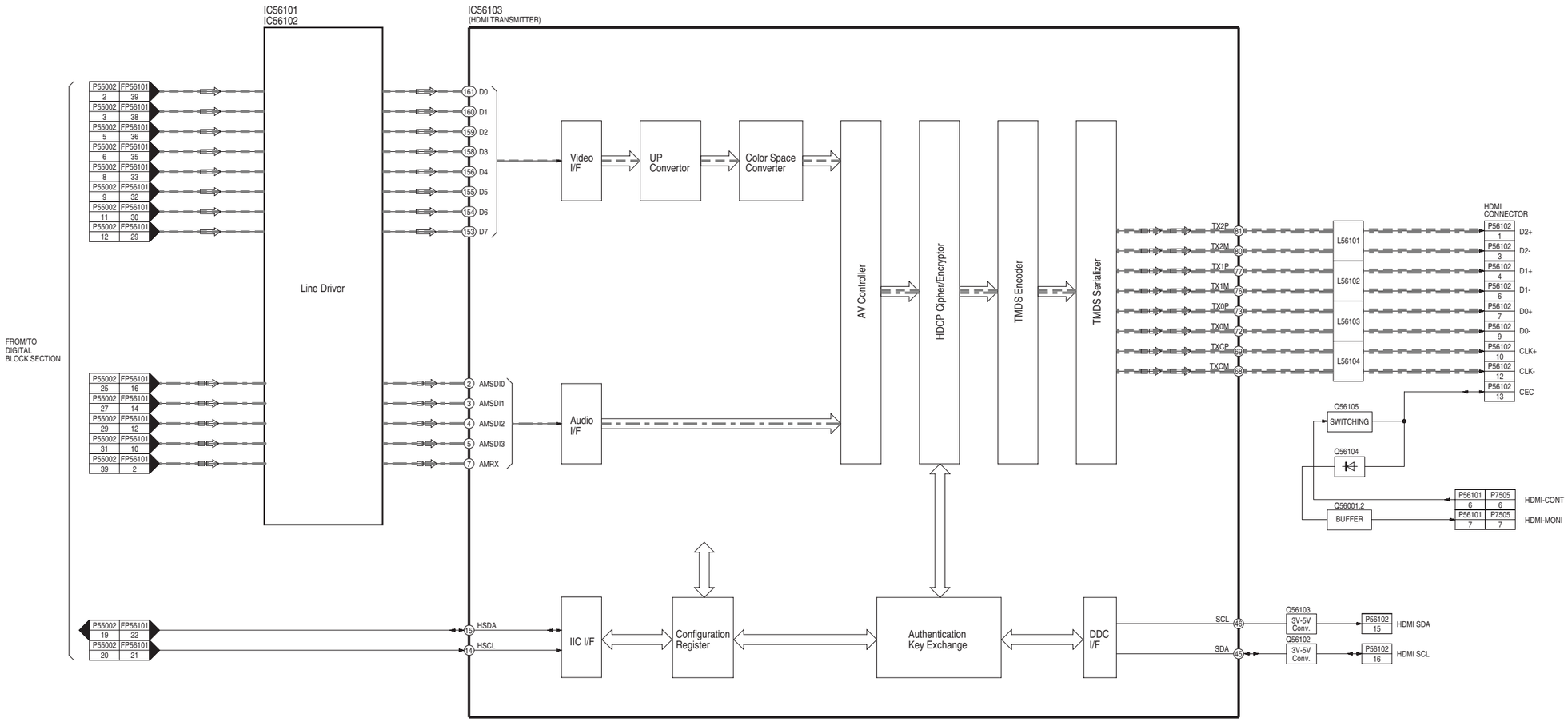
DMR-EH65EE/GC/GCS/GN
Analog Audio Block Diagram

12.4. Analog Timer Block Diagram



DMR-EH65EE/GC/GCS/GN
Timer Block Diagram

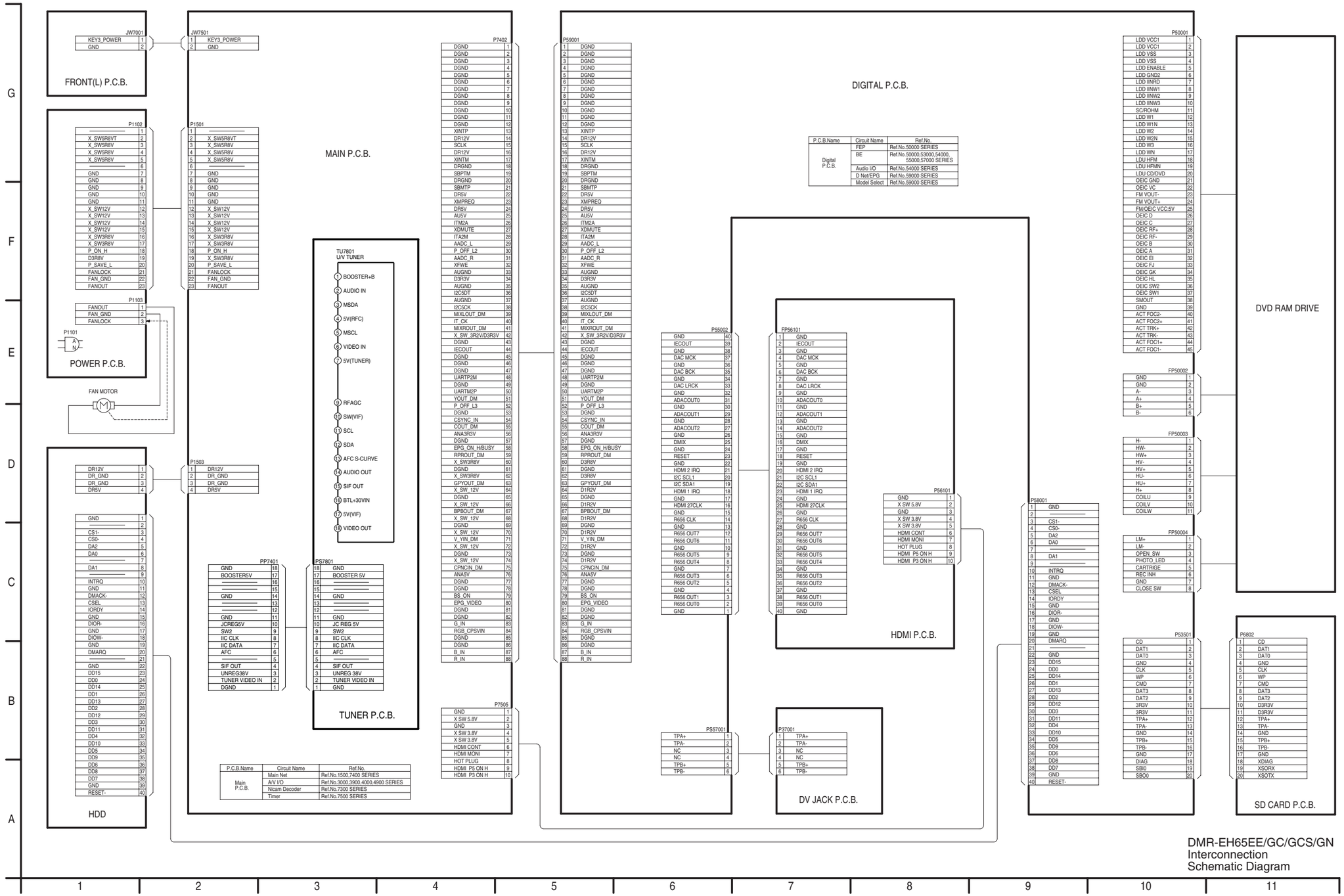
12.5. HDMI Block Diagram



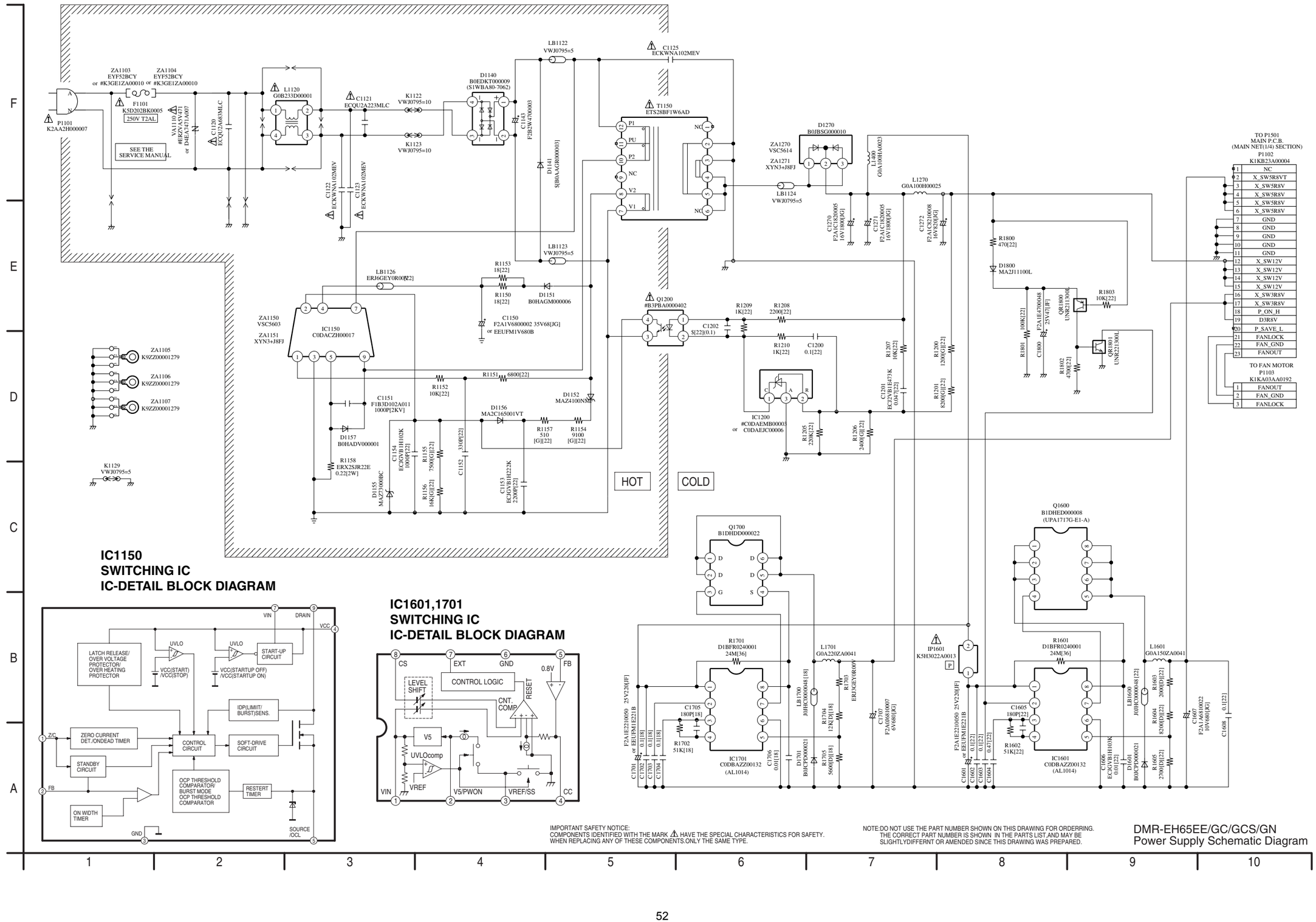
DMR-EH65EE/GC/GCS/GN
HDMI Block Diagram

13 Schematic Diagram

13.1. Interconnection Schematic Diagram



13.2. Power Supply Schematic Diagram



IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,ONLY THE SAME TYPE.

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

DMR-EH65EE/GC/GCS/GN
Power Supply Schematic Diagram

13.3. Main Net (1/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)

LOCATION MAP

1/4	2/4
3/4	4/4

M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
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IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS.ONLY THE SAME TYPE.

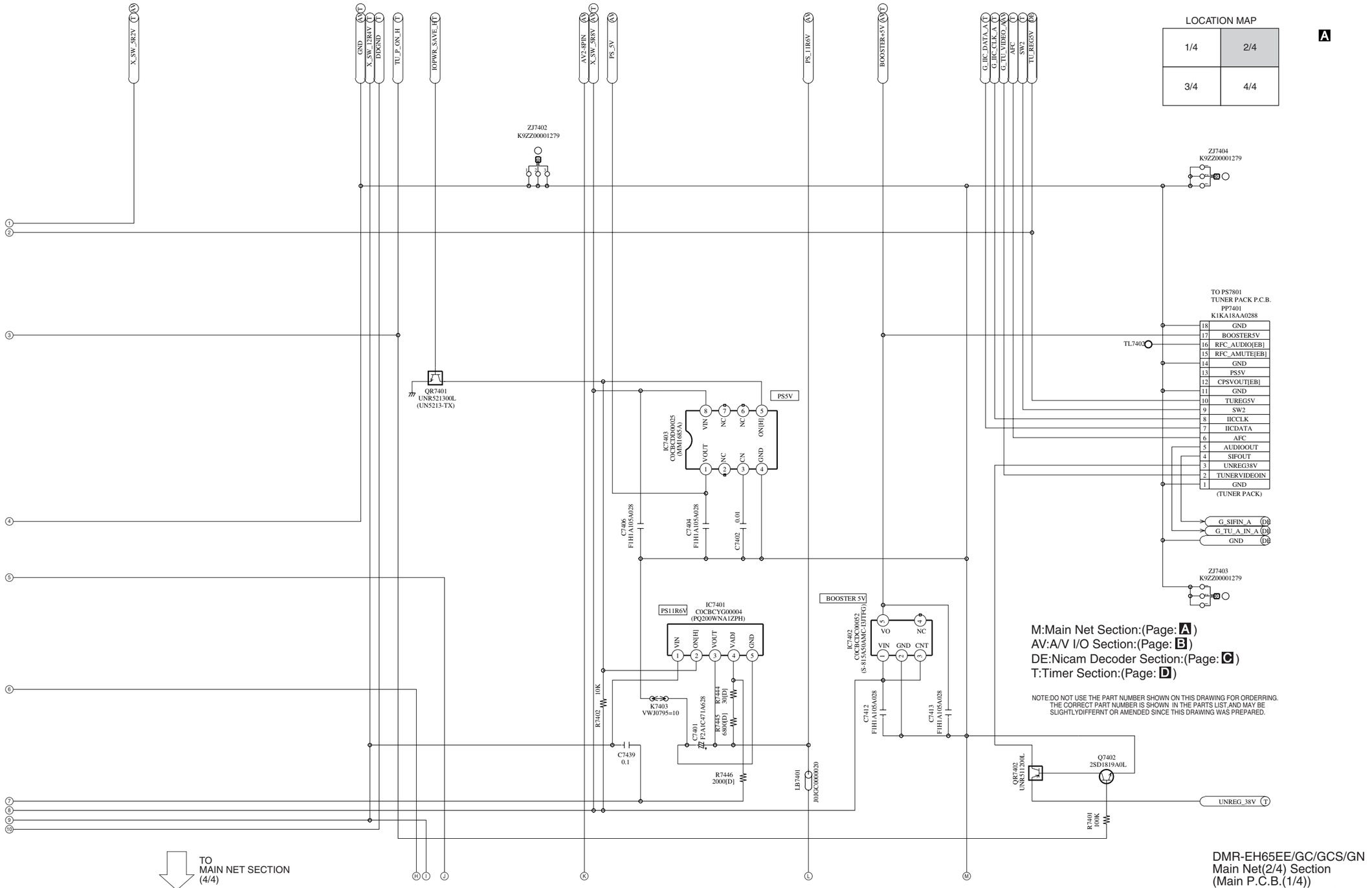
TO P1102
POWER P.C.B.
P1501
K1KA19A00007

X_SW15R5V	1
X_SW5R8VT	2
X_SW5R8V	3
X_SW5R8V	4
X_SW5R8V	5
X_SW5R8V	6
GND	7
GND	8
GND	9
GND	10
GND	11
X_SW12V	12
X_SW12V	13
X_SW12V	14
X_SW12V	15
X_SW3R8V	16
X_SW3R8V	17
P_ON_H	18
X_SW3R8V	19
P_SAVE_L	20
FANLOCK	21
FAN_GND	22
FANOUT	23

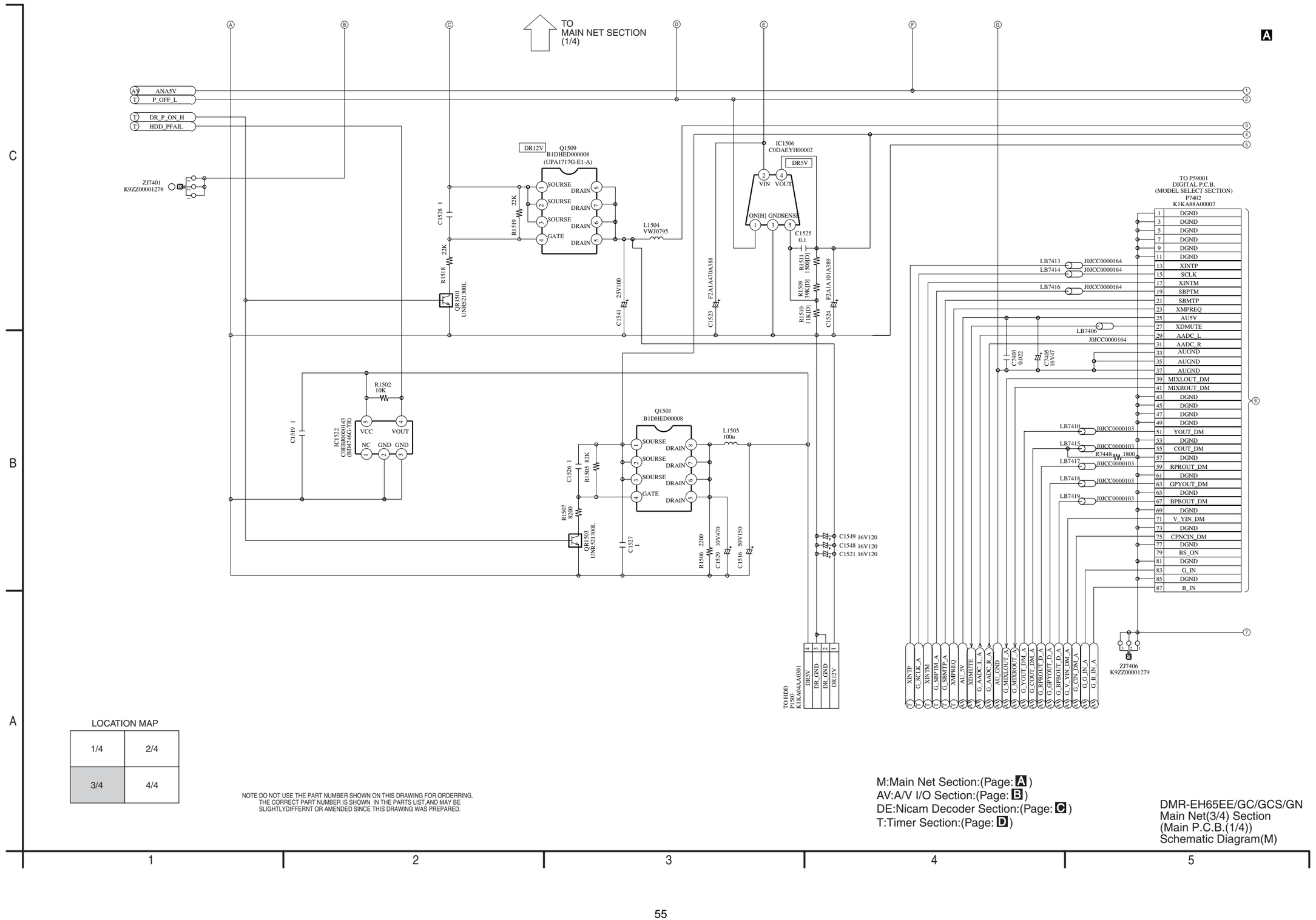
TO
MAIN NET SECTION
(3/4)

DMR-EH65EE/GC/GCS/GN
Main Net(1/4) Section
(Main P.C.B.(1/4))
Schematic Diagram(M)

13.4. Main Net (2/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)



13.5. Main Net (3/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)



LOCATION MAP

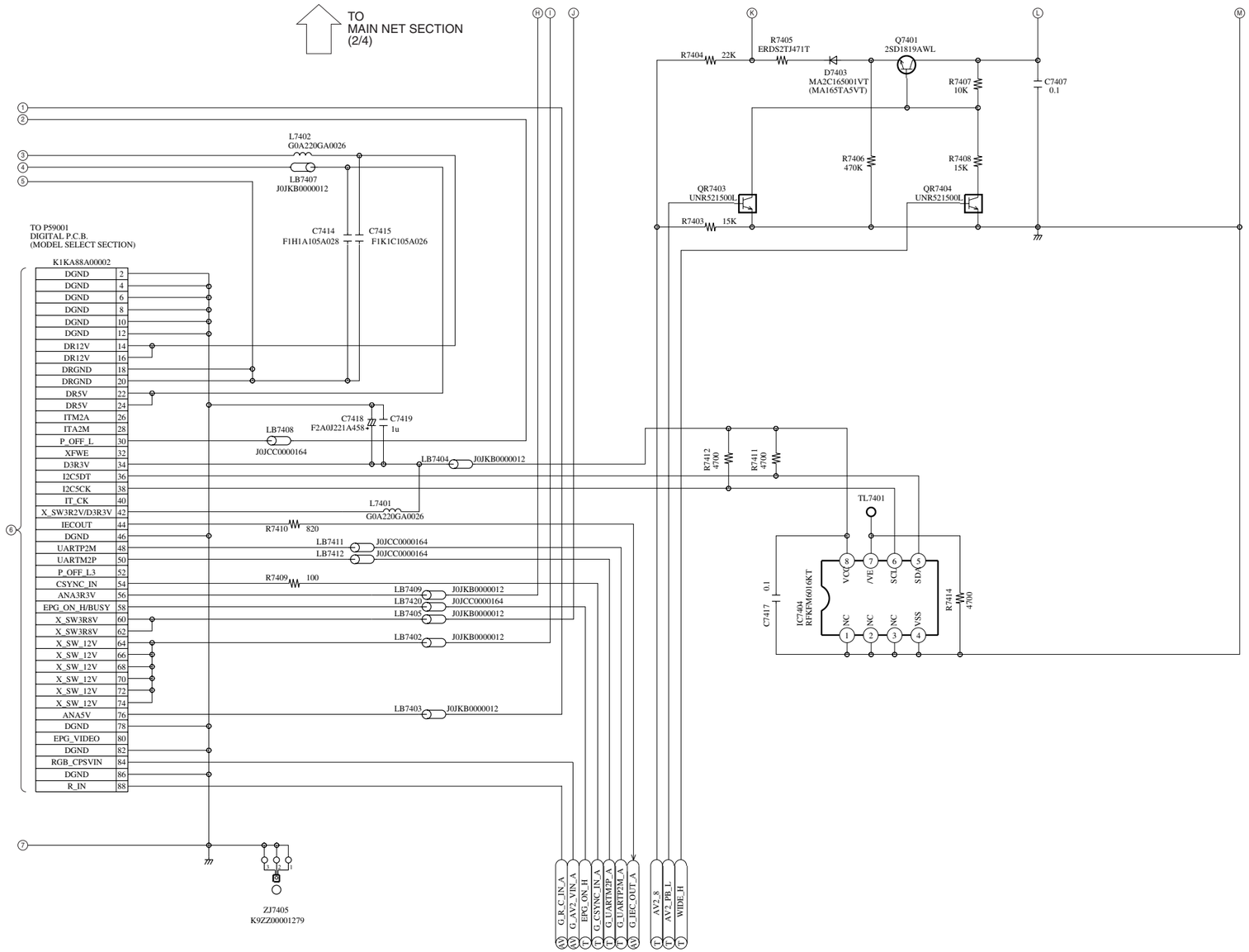
1/4	2/4
3/4	4/4

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

DMR-EH65EE/GC/GCS/GN
Main Net(3/4) Section
(Main P.C.B.(1/4))
Schematic Diagram(M)

13.6. Main Net (4/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)



A

LOCATION MAP

1/4	2/4
3/4	4/4

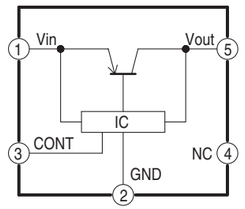
M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

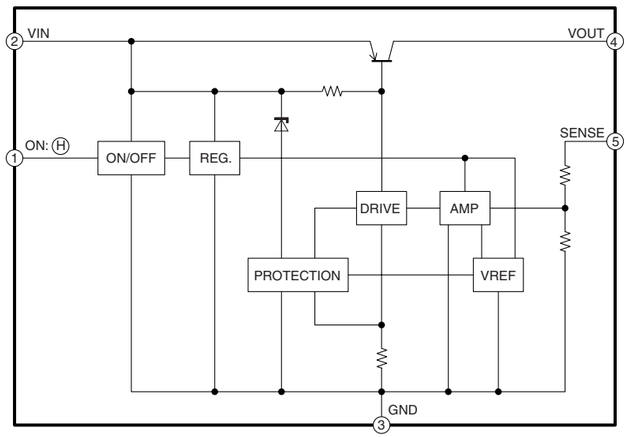
DMR-EH65EE/GC/GCS/GN
Main Net(4/4) Section
(Main P.C.B.(1/4))
Schematic Diagram(M)

6 7 8 9 10

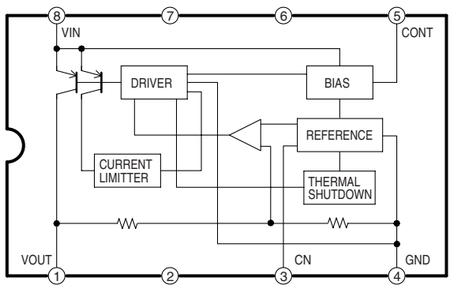
IC1505
XSW +3.3V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



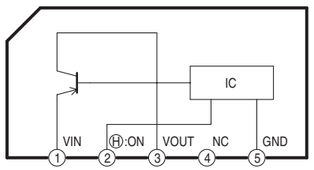
IC1506
DR +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



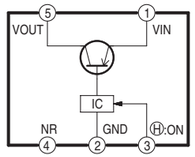
IC1507
XSW +5.2V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



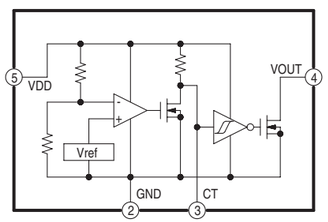
IC1510
TU +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



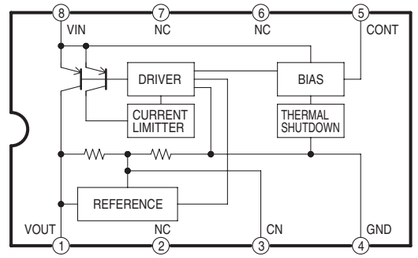
IC1520
ANA +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



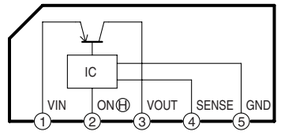
IC1522
RESET
IC-DETAIL BLOCK DIAGRAM



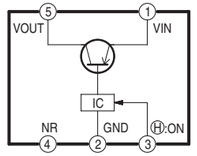
IC1521
ANA +3.3V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



IC7401
PS +11.6V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



IC7402
BOOSTER +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



IC7403
PS +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM

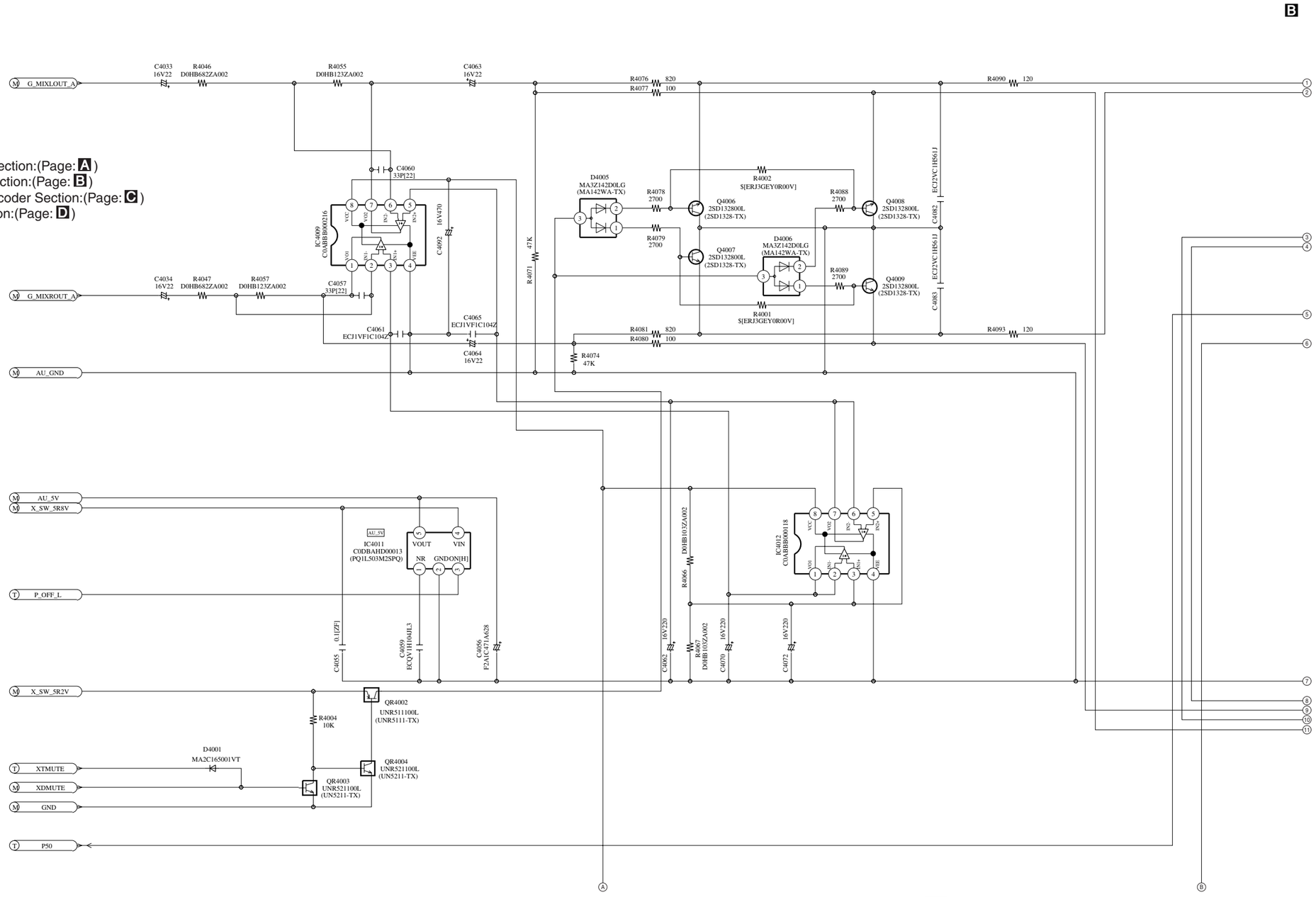
IC1505 Detail Block Diagram
IC1506 Detail Block Diagram
IC1507 Detail Block Diagram
IC1510 Detail Block Diagram
IC1520 Detail Block Diagram
IC1521 Detail Block Diagram
IC1522 Detail Block Diagram
IC7401 Detail Block Diagram
IC7402 Detail Block Diagram
IC7403 Detail Block Diagram
DMR-EH65EE/GC/GCS/GN IC-Detail Block Diagram

13.7. A/V I/O (1/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)

LOCATION MAP

1/4	2/4
3/4	4/4

M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)



NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

TO
A/V I/O SECTION
(3/4)

DMR-EH65EE/GC/GCS/GN
A/V I/O(1/4) Section
(Main P.C.B.(2/4))
Schematic Diagram(AV)

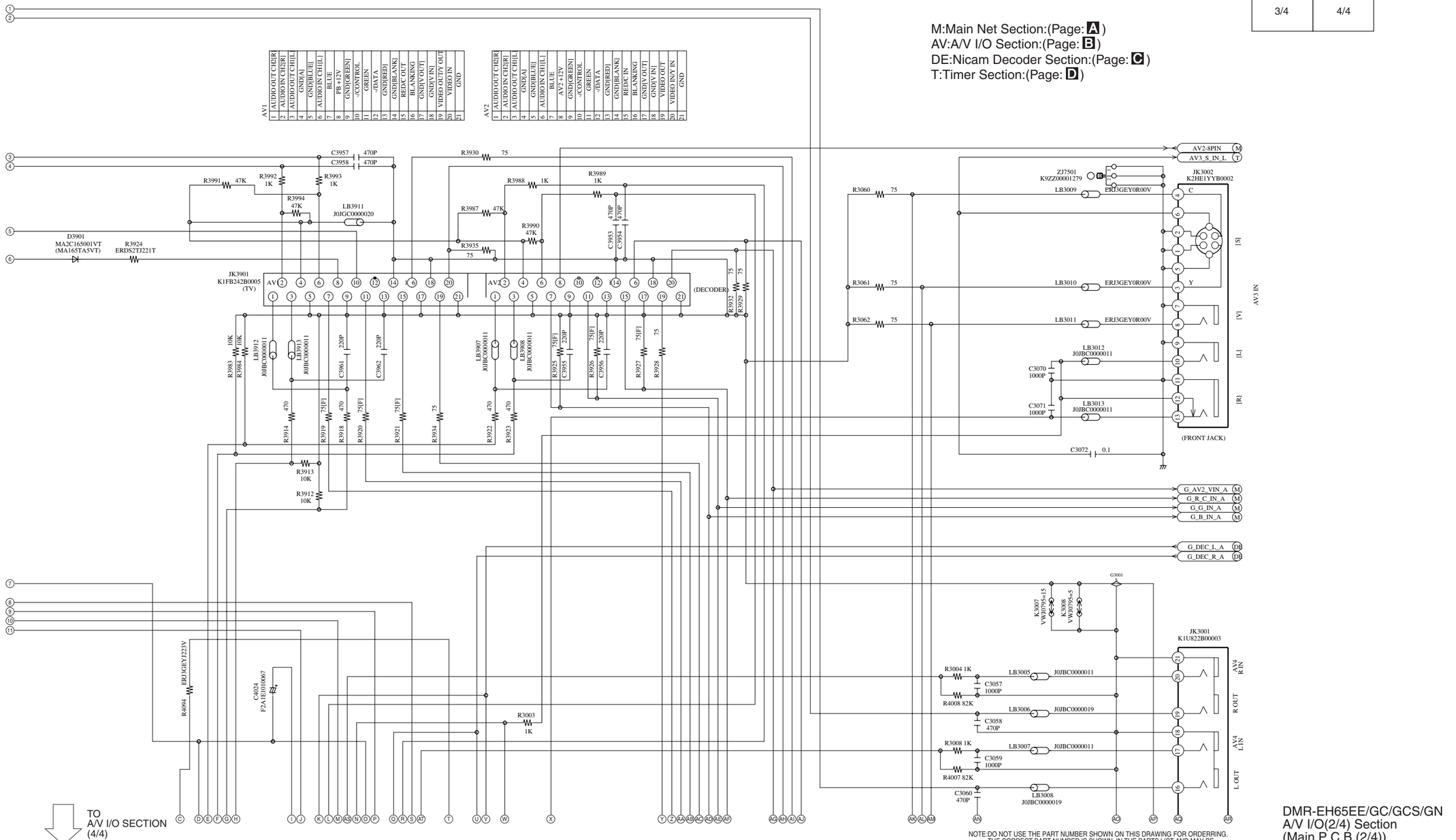
13.8. A/V I/O (2/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)

LOCATION MAP

1/4	2/4
3/4	4/4

B

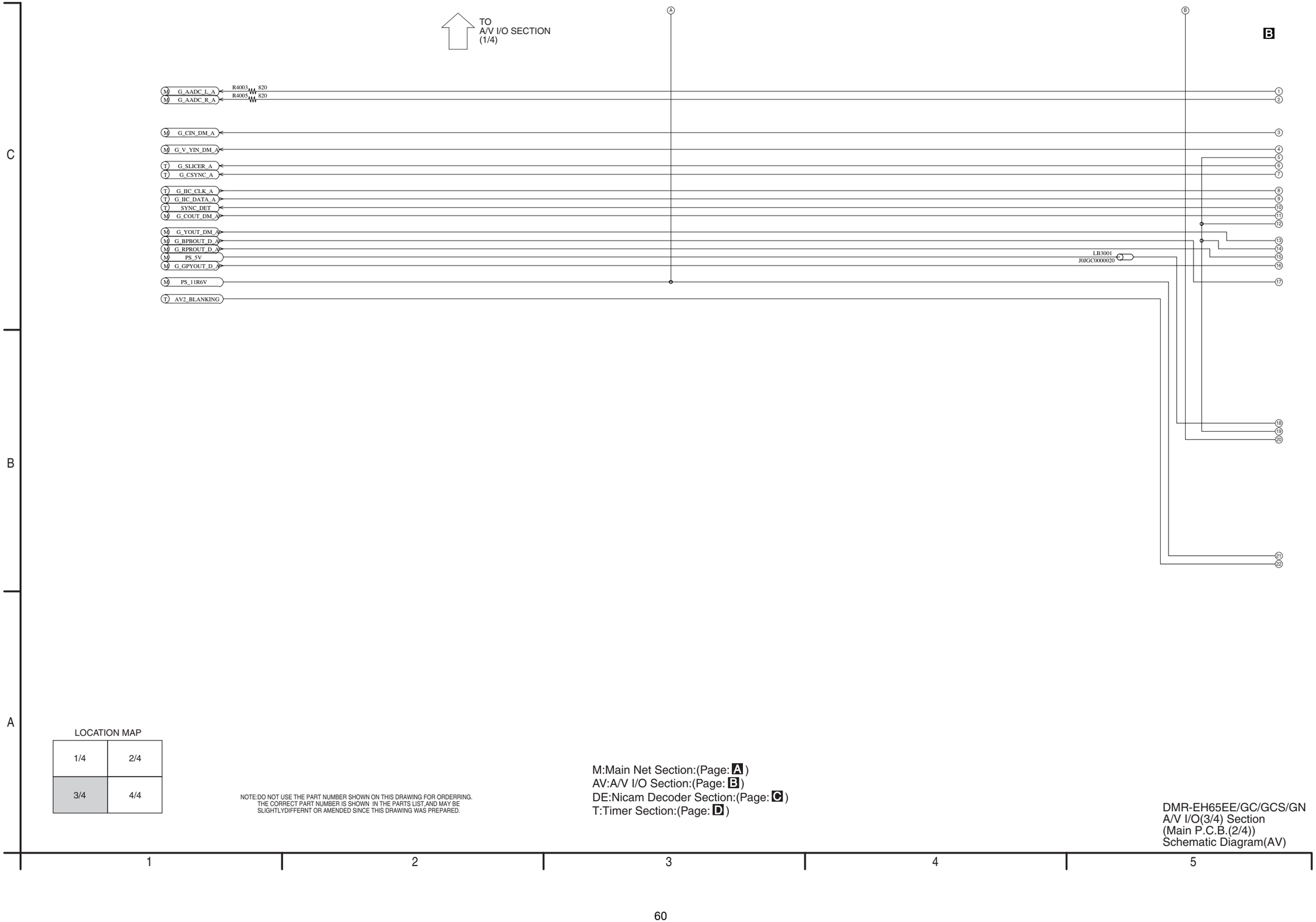
M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)



NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

DMR-EH65EE/GC/GCS/GN
A/V I/O(2/4) Section
(Main P.C.B.(2/4))
Schematic Diagram(AV)

13.9. A/V I/O (3/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)



LOCATION MAP

1/4	2/4
3/4	4/4

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
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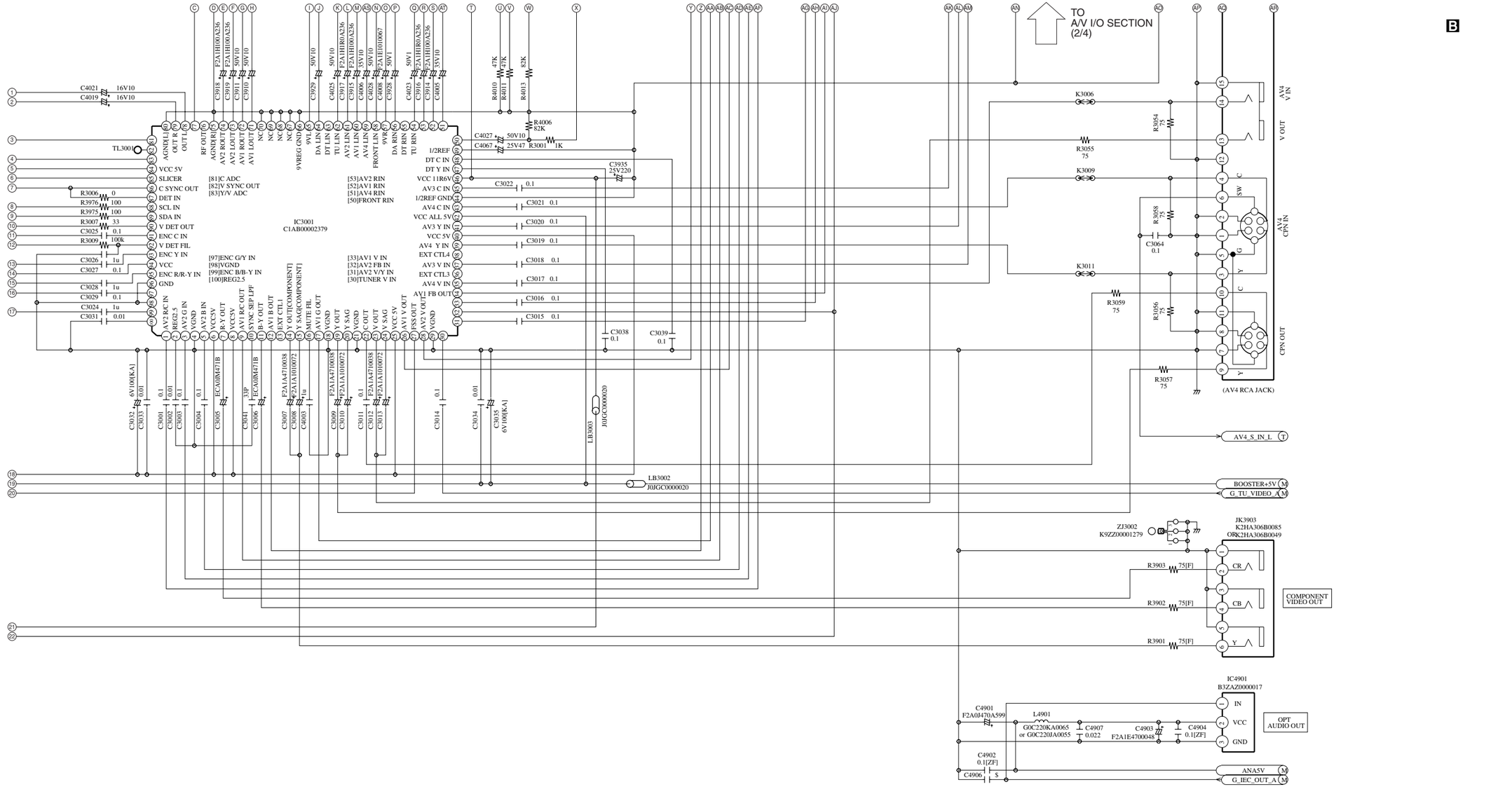
M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

DMR-EH65EE/GC/GCS/GN
A/V I/O(3/4) Section
(Main P.C.B.(2/4))
Schematic Diagram(AV)

13.10. A/V I/O (4/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)



M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE
SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

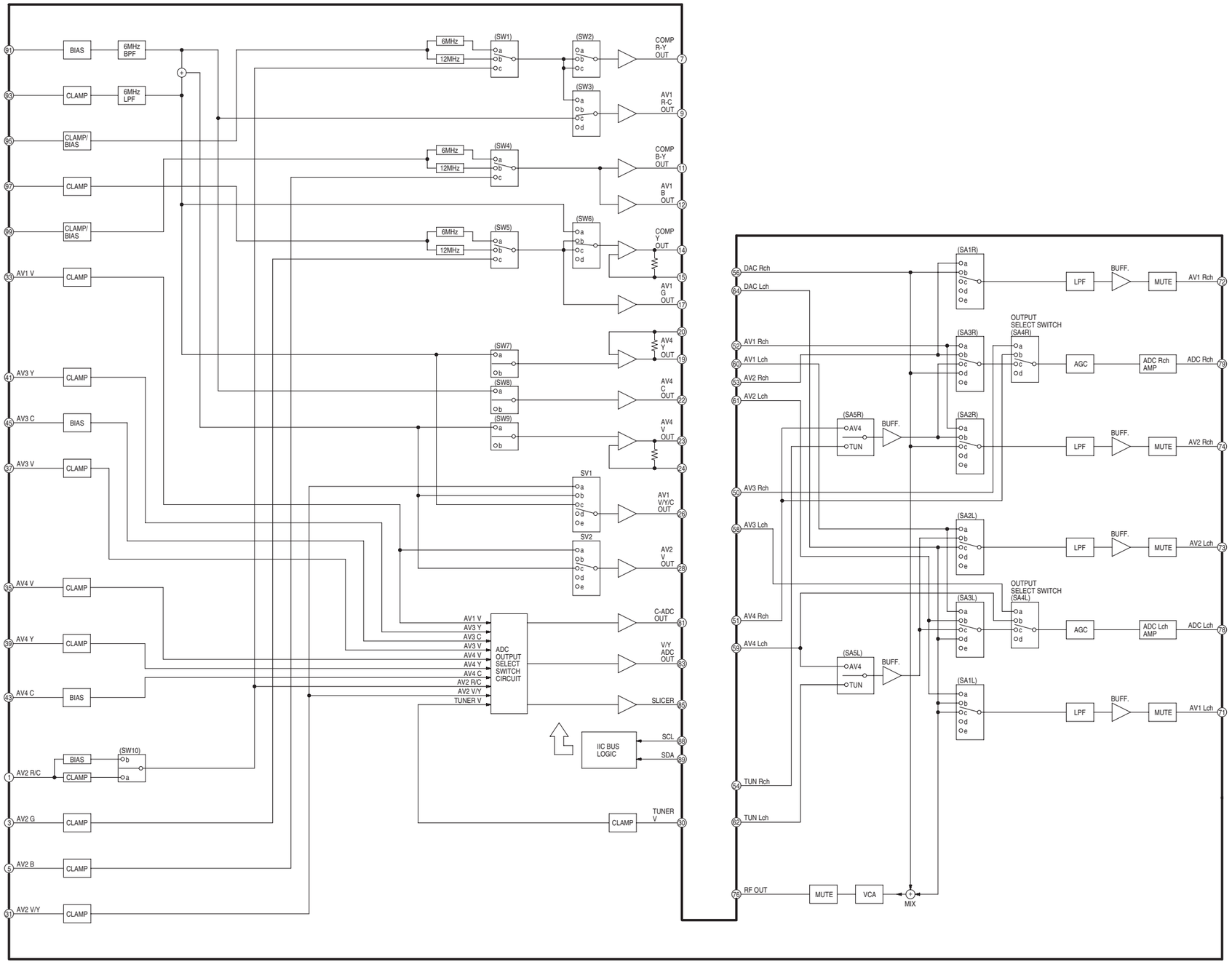
LOCATION MAP

1/4	2/4
3/4	4/4

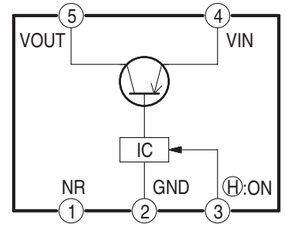
DMR-EH65EE/GC/GCS/GN
A/V I/O(4/4) Section
(Main P.C.B.(2/4))
Schematic Diagram(AV)

6 7 8 9 10

IC3001
VIDEO/AUDIO PROCESSOR
IC-DETAIL BLOCK DIAGRAM

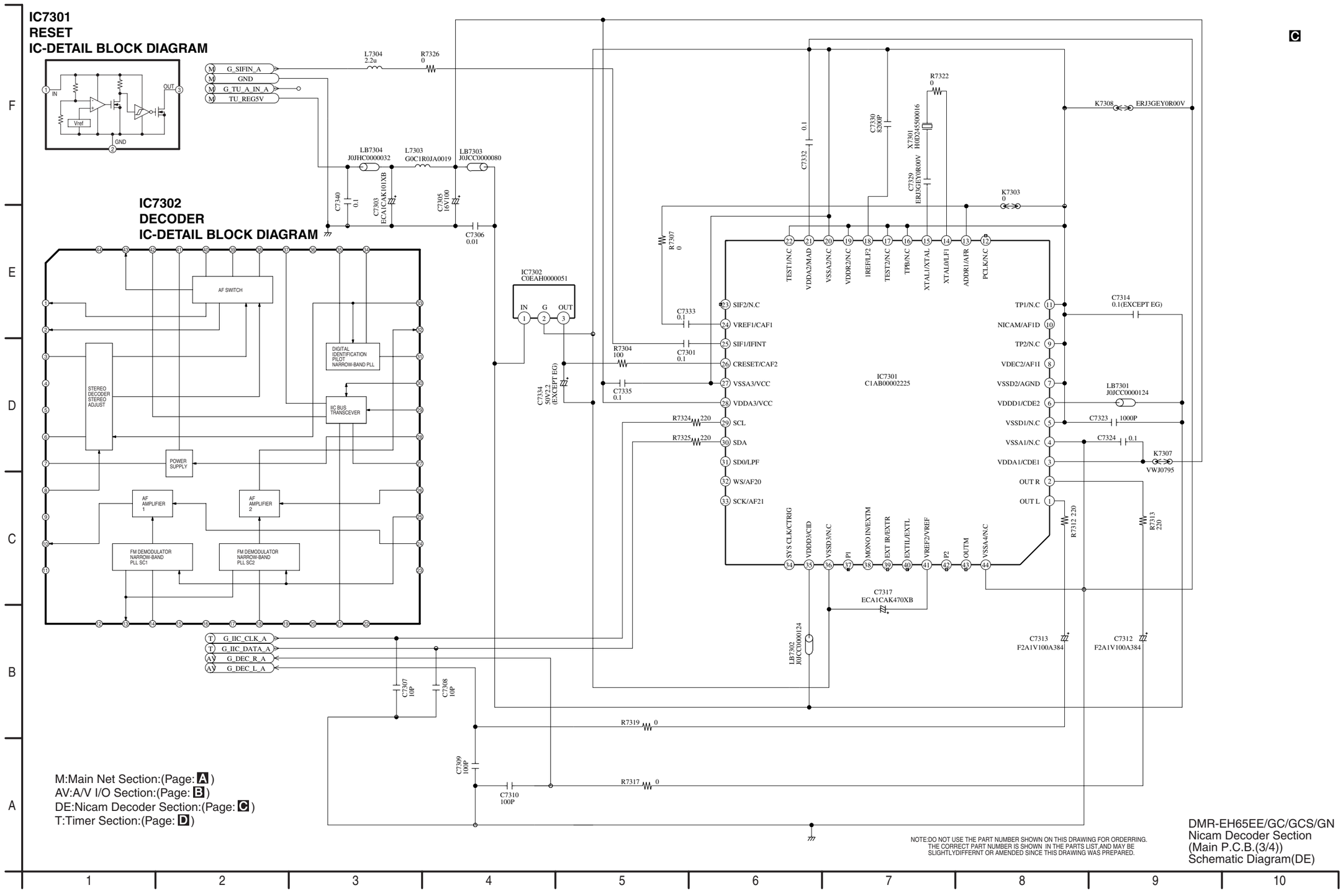


IC4011
AU +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM



IC3001 Detail Block Diagram
IC4011 Detail Block Diagram
DMR-EH65EE/GC/GCS/GN IC-Detail Block Diagram

13.11. Nicam Decoder Section (Main P.C.B. (3/4)) Schematic Diagram (DE)



M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

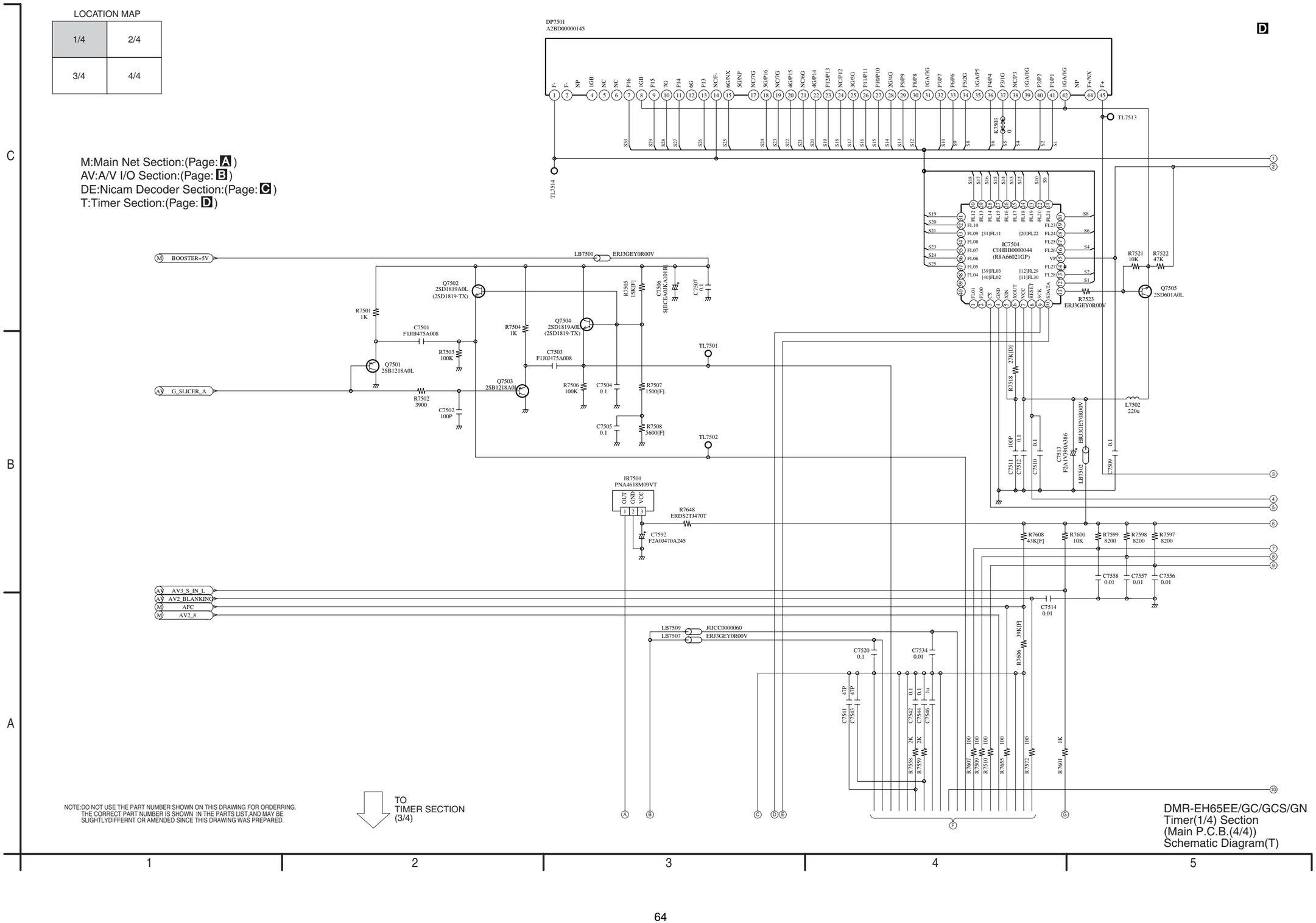
DMR-EH65EE/GC/GCS/GN
Nicam Decoder Section
(Main P.C.B.(3/4))
Schematic Diagram(DE)

13.12. Timer (1/4) Section (Main P.C.B. (4/4)) Schematic Diagram (T)

LOCATION MAP

1/4	2/4
3/4	4/4

M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)



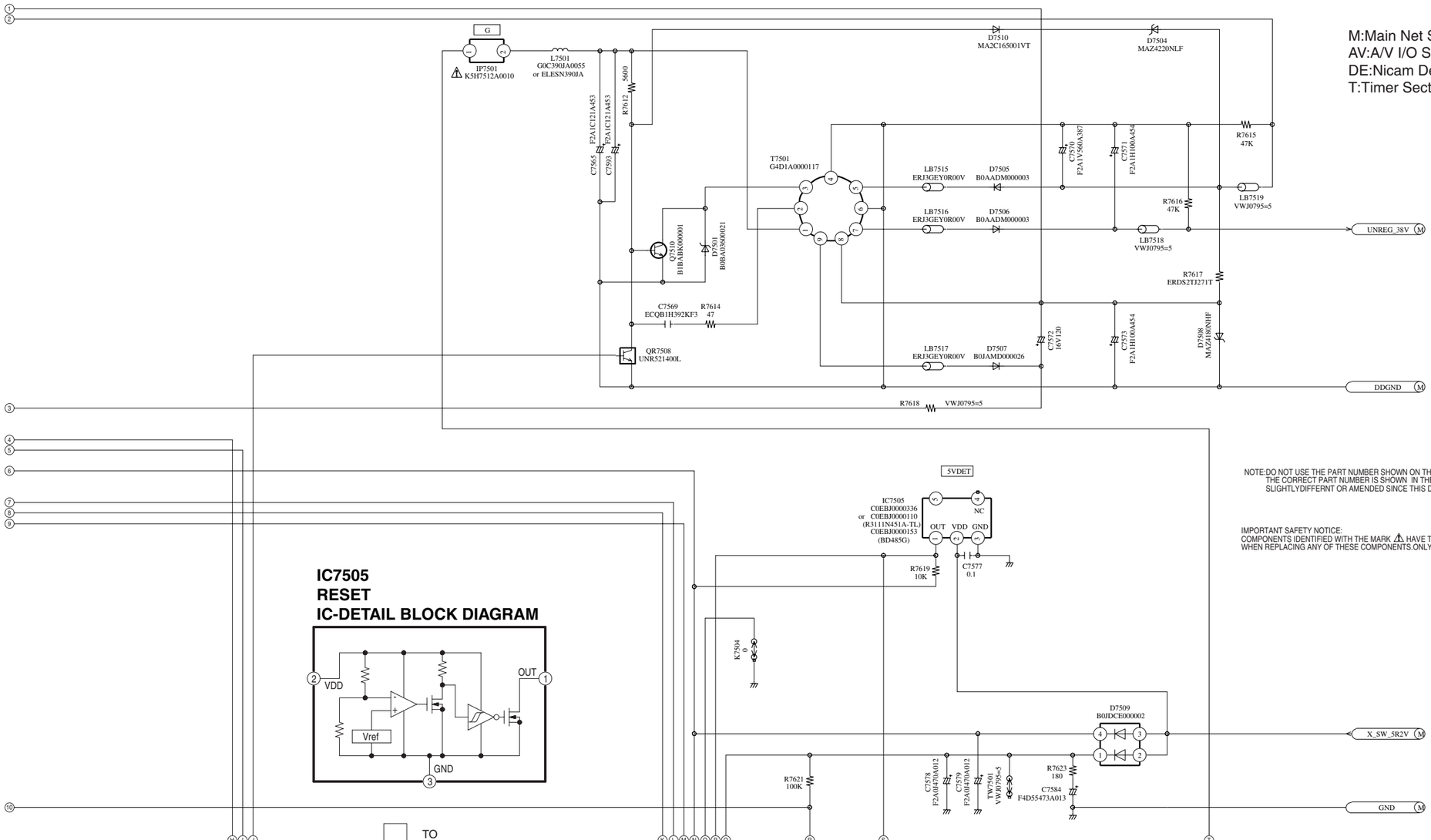
13.13. Timer (2/4) Section (Main P.C.B. (4/4)) Schematic Diagram (T)

LOCATION MAP

1/4	2/4
3/4	4/4

D

M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)



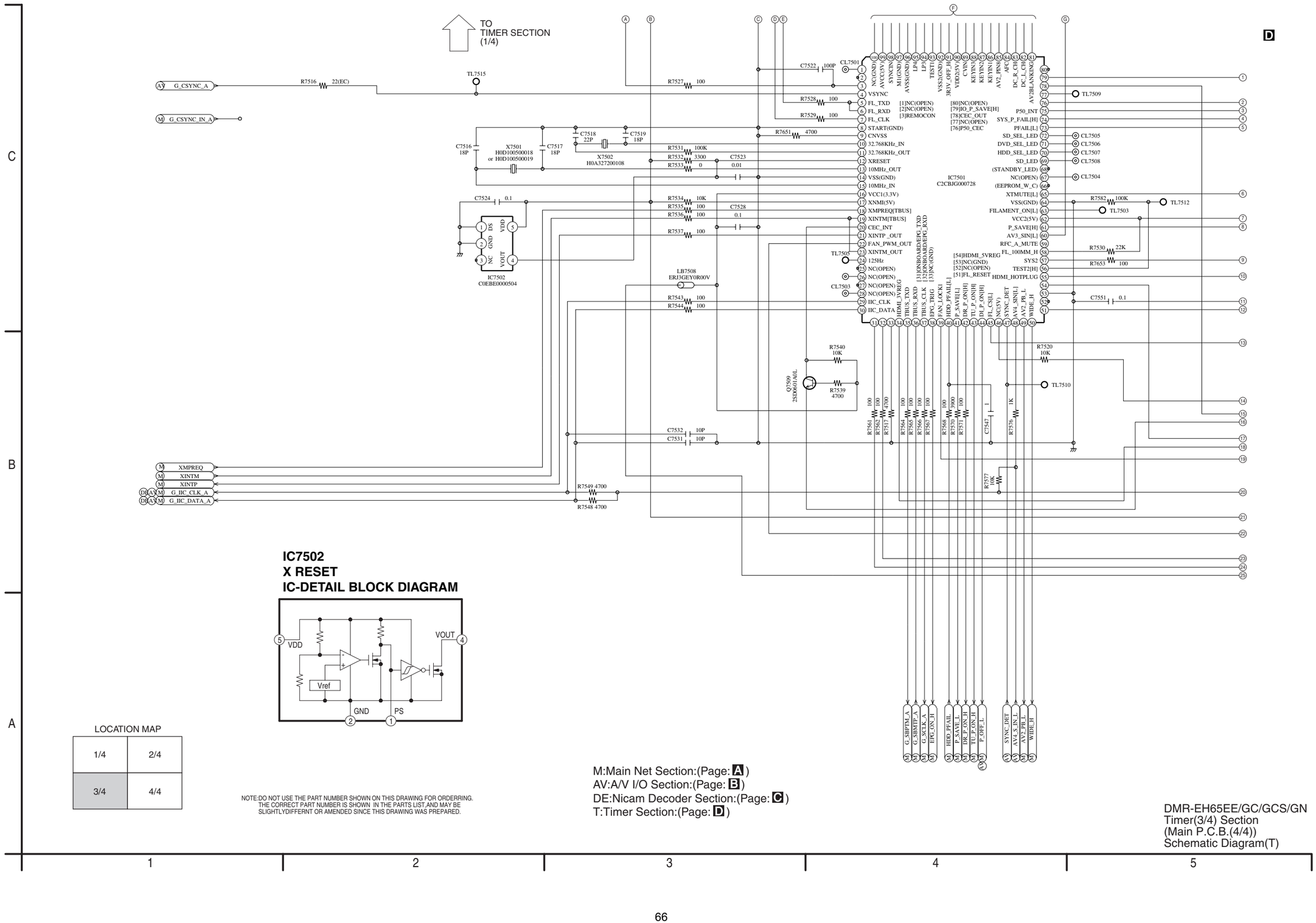
NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,ONLY THE SAME TYPE.

DMR-EH65EE/GC/GCS/GN
Timer(2/4) Section
(Main P.C.B.(4/4))
Schematic Diagram(T)

6 | 7 | 8 | 9 | 10

13.14. Timer (3/4) Section (Main P.C.B. (4/4)) Schematic Diagram (T)



LOCATION MAP

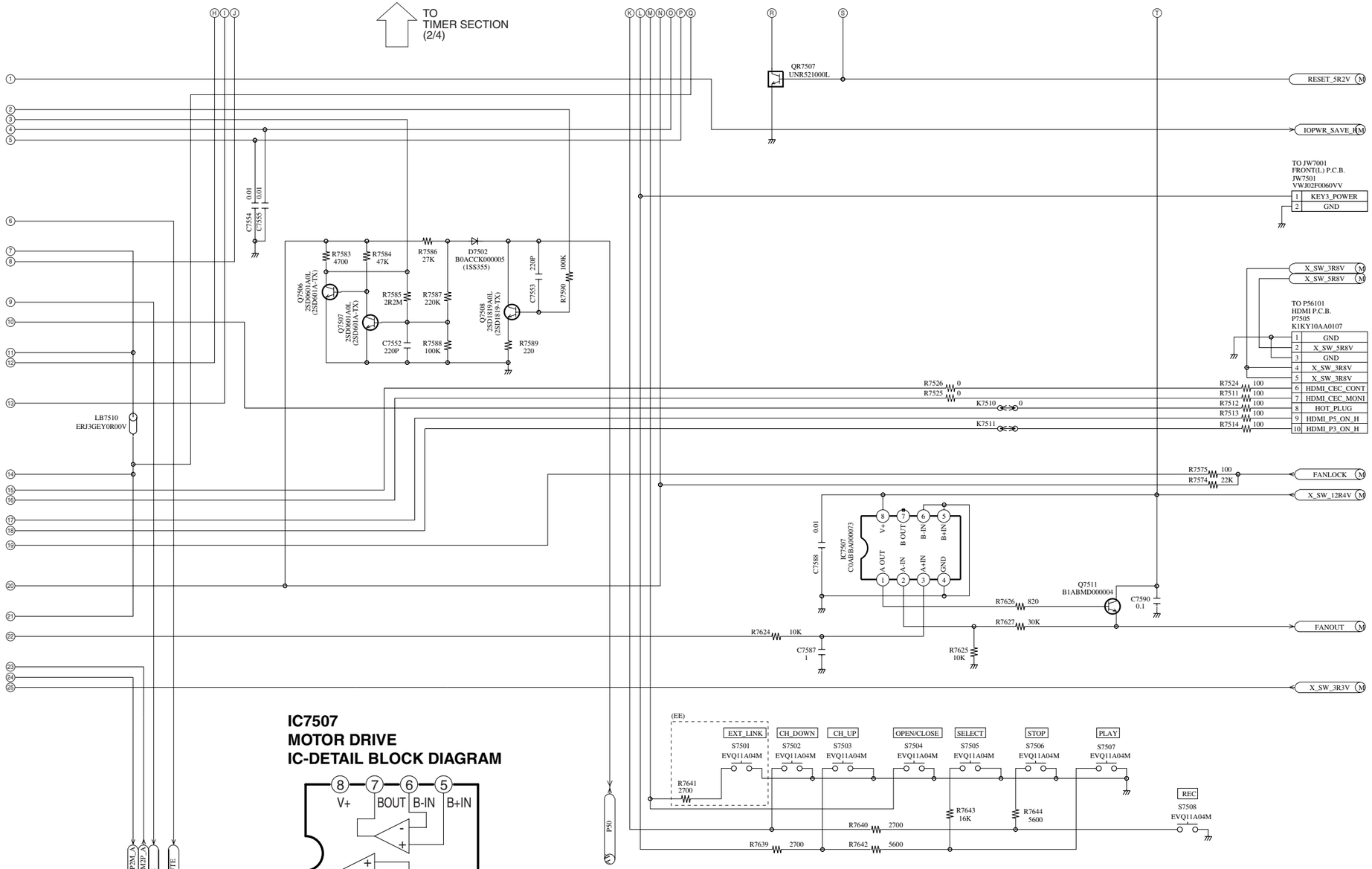
1/4	2/4
3/4	4/4

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

DMR-EH65EE/GC/GCS/GN
Timer(3/4) Section
(Main P.C.B.(4/4))
Schematic Diagram(T)

13.15. Timer (4/4) Section (Main P.C.B. (4/4)) Schematic Diagram (T)



M:Main Net Section:(Page: A)
AV:A/V I/O Section:(Page: B)
DE:Nicam Decoder Section:(Page: C)
T:Timer Section:(Page: D)

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

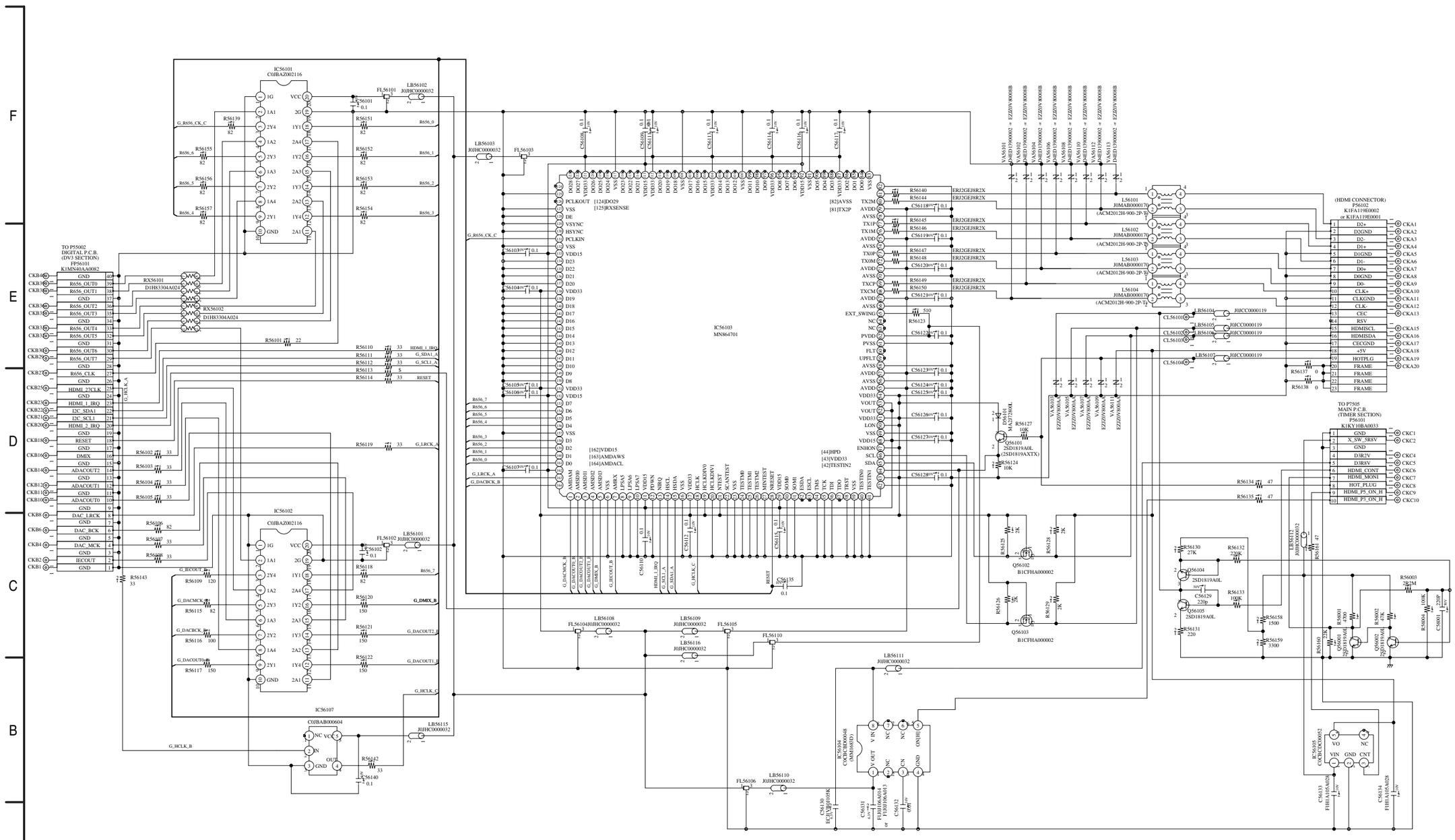
LOCATION MAP

1/4	2/4
3/4	4/4

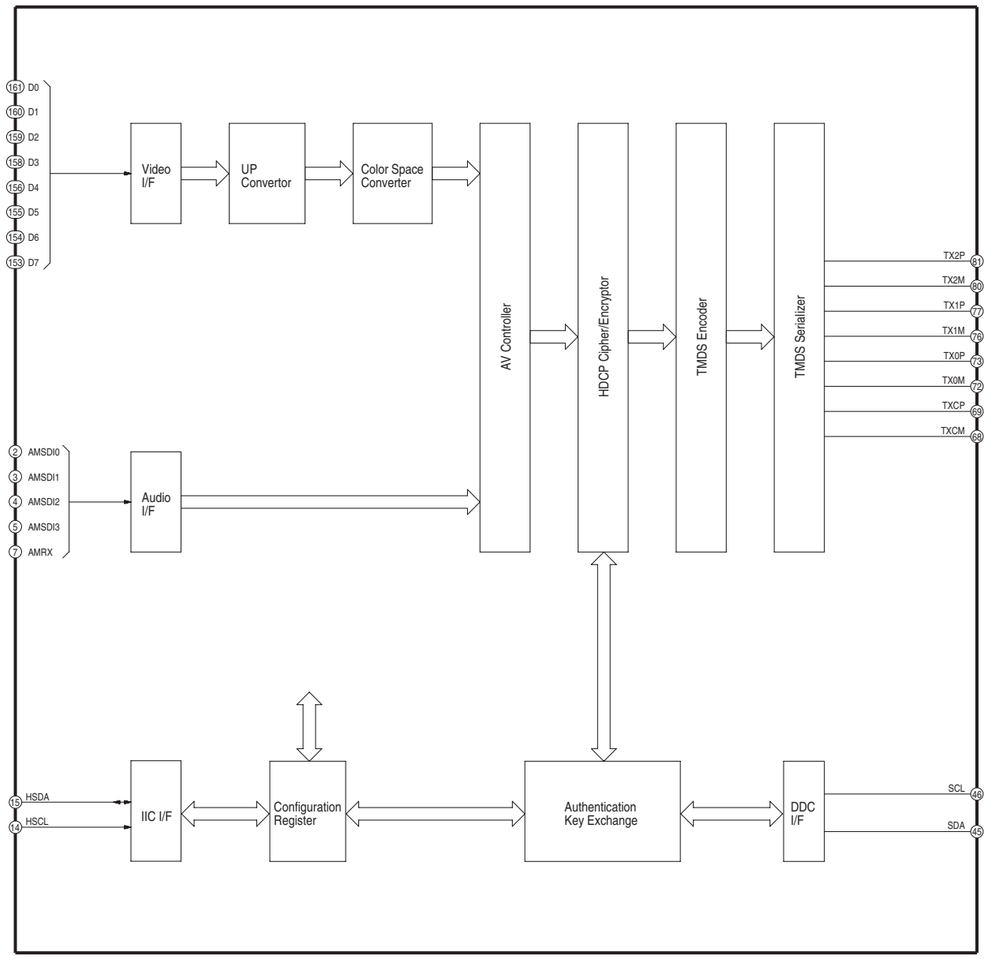
DMR-EH65EE/GC/GCS/GN
TIMER(4/4) Section
(Main P.C.B.(4/4))
Schematic Diagram(T)

6 7 8 9 10

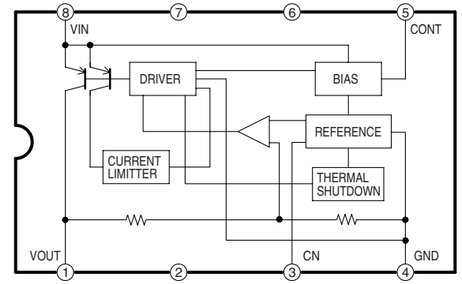
13.16. HDMI Schematic Diagram



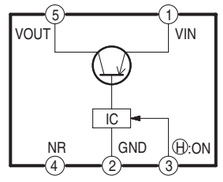
IC56103
HDMI TRANSMITTER
IC-DETAIL BLOCK DIAGRAM



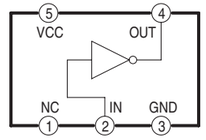
IC56104
+3.3V SWITCHING REG.
IC-DETAIL BLOCK DIAGRAM



IC56105
+5V SWITCHING REG.
IC-DETAIL BLOCK DIAGRAM

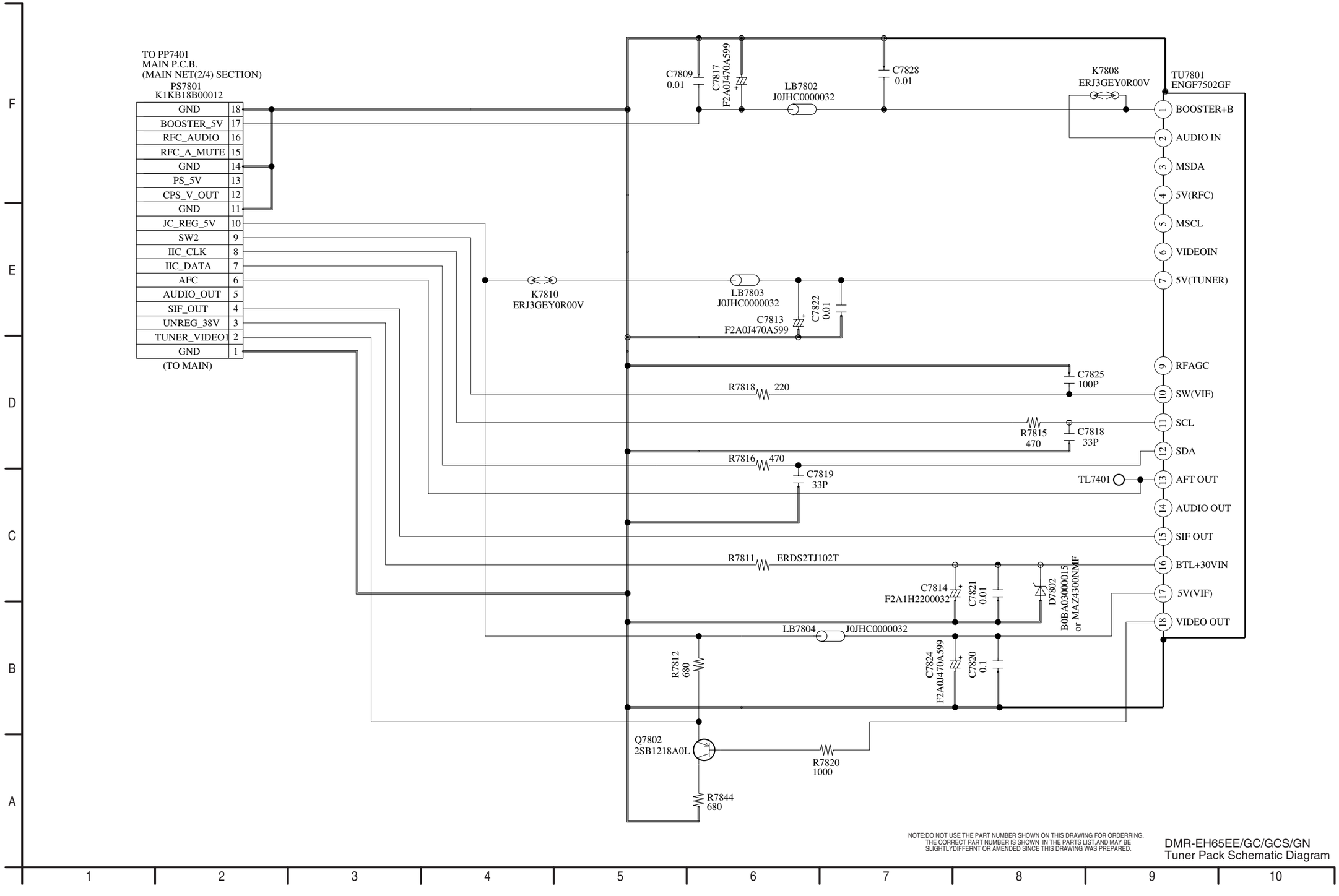


IC56107
INVERTER
IC-DETAIL BLOCK DIAGRAM

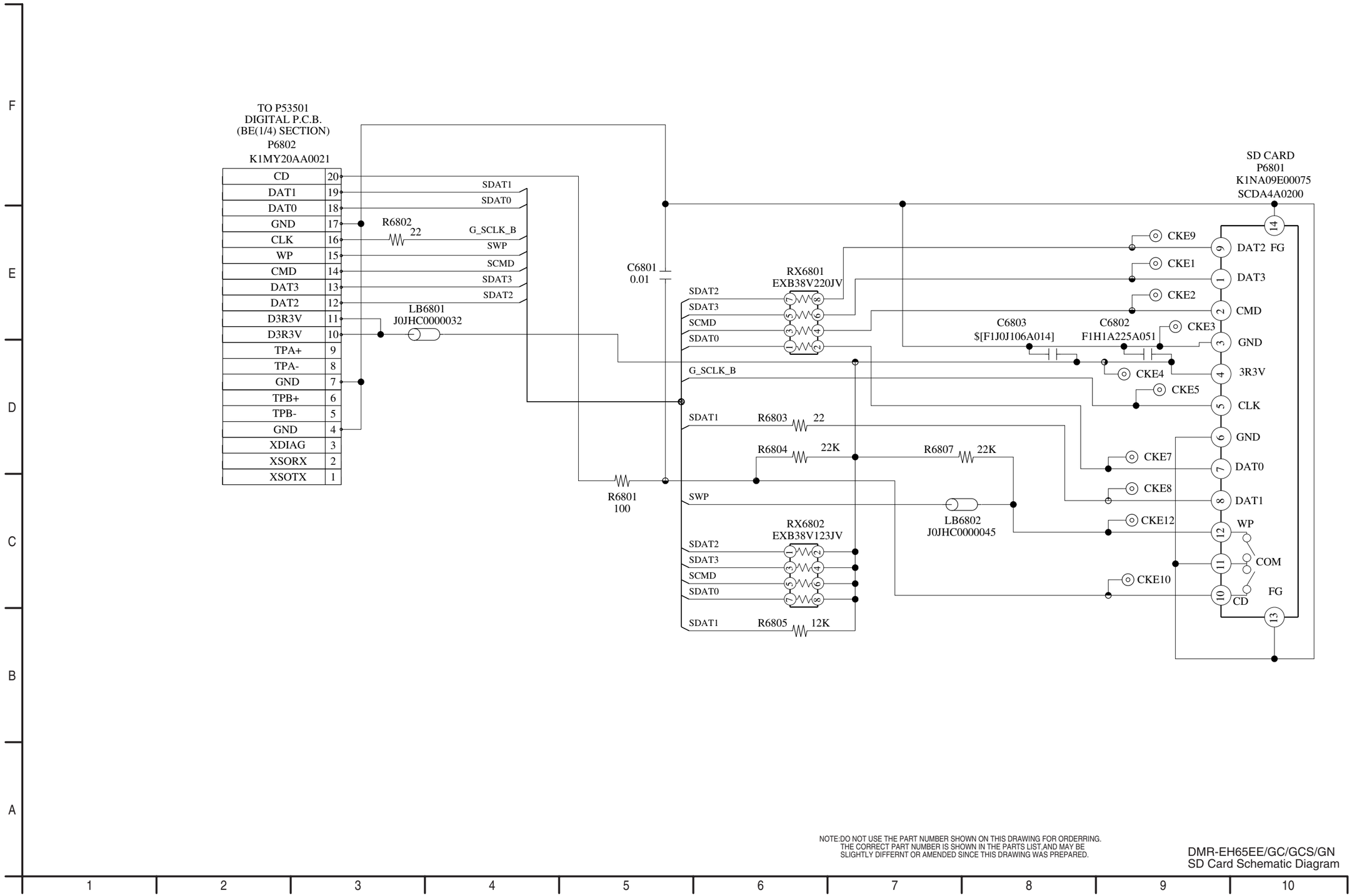


IC56103 Detail Block Diagram
IC56104 Detail Block Diagram
IC56105 Detail Block Diagram
IC56107 Detail Block Diagram
DMR-EH65EE/GC/GCS/GN IC-Detail Block Diagram

13.17. Tuner Pack Schematic Diagram



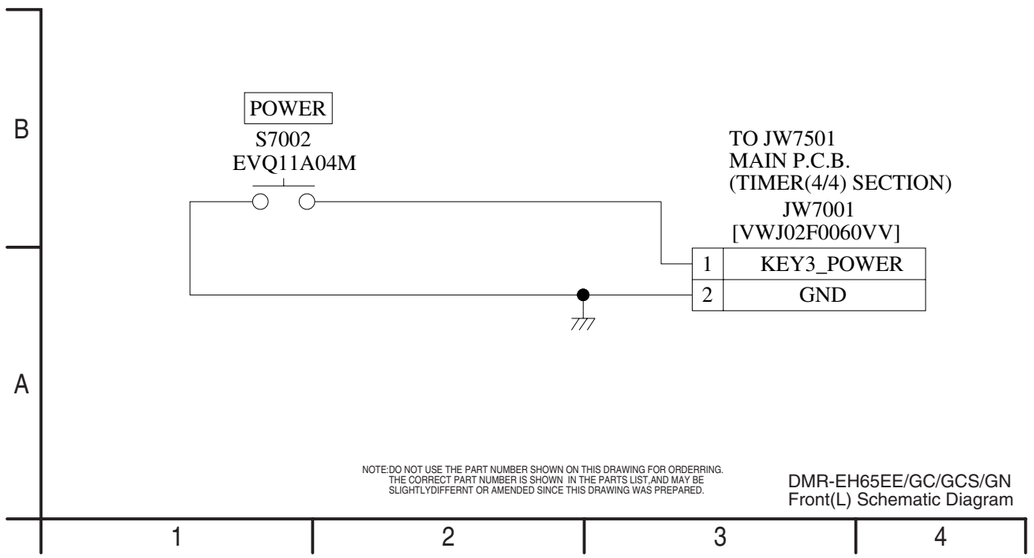
13.18. SD Card Schematic Diagram



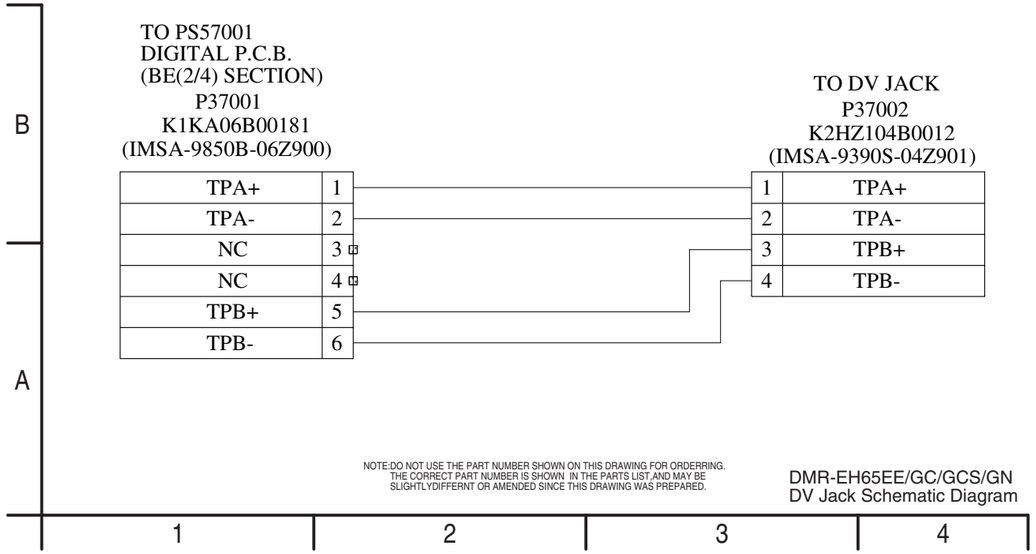
NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLY DIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

DMR-EH65EE/GC/GCS/GN
SD Card Schematic Diagram

13.19. Front (L) Schematic Diagram



13.20. DV Jack Schematic Diagram

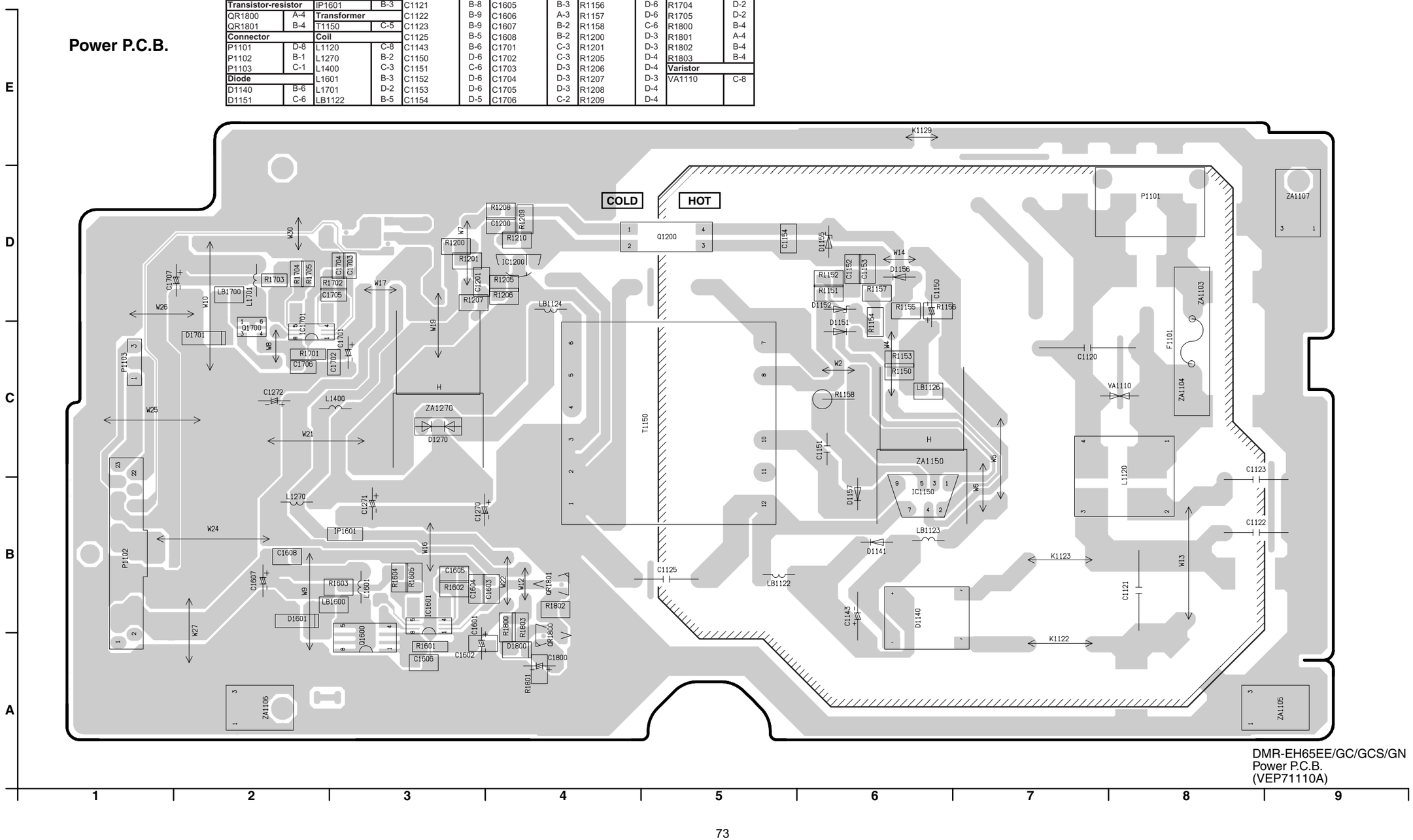


14 Printed Circuit Board

14.1. Power P.C.B.

Power P.C.B.

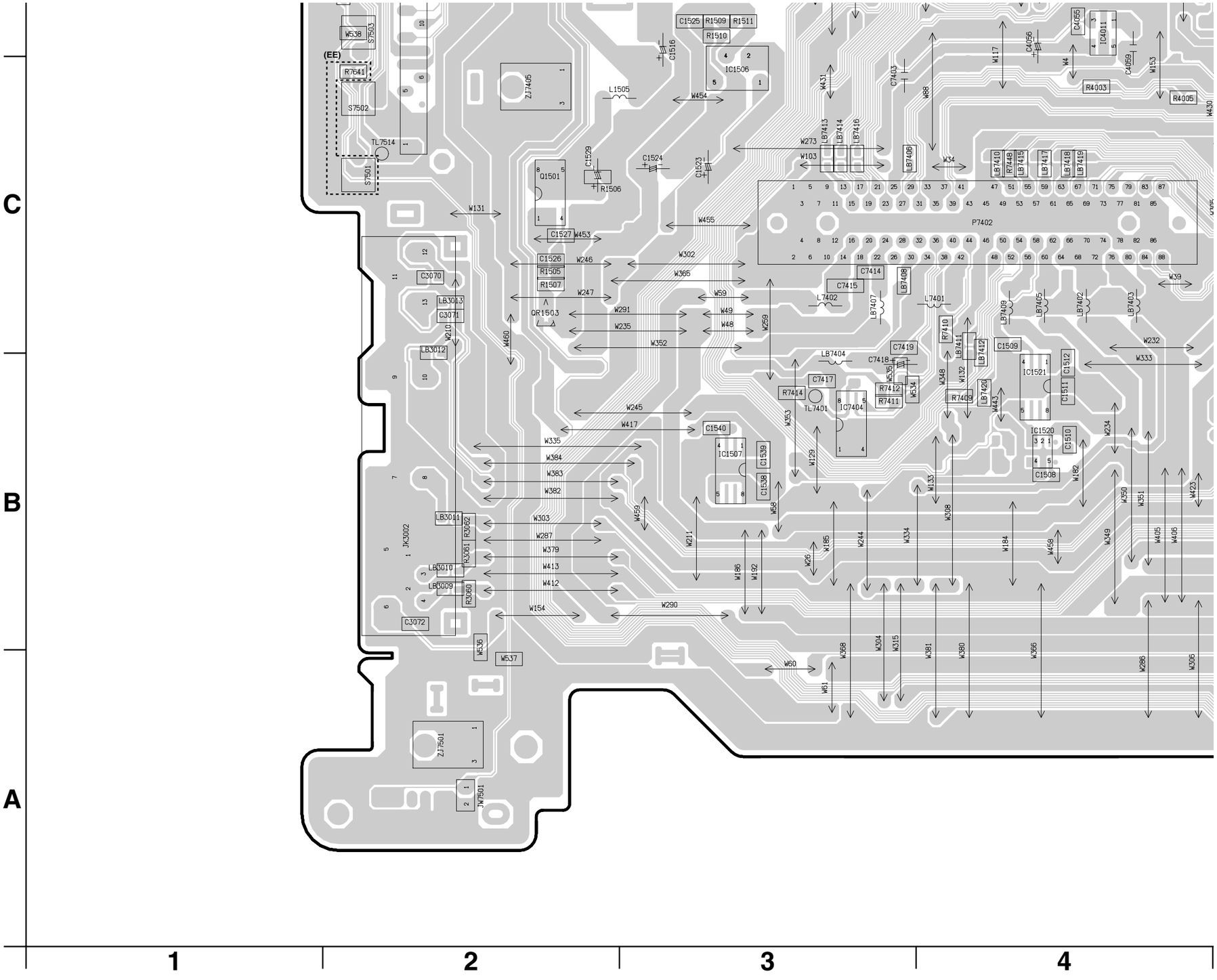
Power P.C.B.													
Integrated Circuit		D1152	D-6	LB1123	B-6	C1200	D-4	C1707	D-1	R1210	D-4
IC1150	B-6	D1155	D-6	LB1124	D-4	C1201	D-4	C1800	A-4	R1601	A-3
IC1200	D-4	D1156	D-6	LB1126	C-6	C1270	B-3	**Resistor**		R1602	B-3
IC1601	B-3	D1157	B-6	LB1600	B-3	C1271	B-3	R1150	C-6	R1603	B-3
IC1701	C-2	D1270	C-3	LB1700	D-2	C1272	C-2	R1151	D-6	R1604	B-3
Transistor		D1601	B-2	**Fuse**		C1601	A-3	R1152	D-6	R1605	B-3
Q1200	D-5	D1701	C-2	F1101	C-8	C1602	A-4	R1153	C-6	R1701	C-2
Q1600	A-3	D1800	A-4	**Capacitor**		C1603	B-4	R1154	C-6	R1702	D-3
Q1700	C-2	**IC Protector**		C1120	C-7	C1604	B-3	R1155	D-6	R1703	D-2
Transistor-resistor		IP1601	B-3	C1121	B-8	C1605	B-3	R1156	D-6	R1704	D-2
QR1800	A-4	**Transformer**		C1122	B-9	C1606	A-3	R1157	D-6	R1705	D-2
QR1801	B-4	T1150	C-5	C1123	B-9	C1607	B-2	R1158	C-6	R1800	B-4
Connector		**Coil**		C1125	B-5	C1608	B-2	R1200	D-3	R1801	A-4
P1101	D-8	L1120	C-8	C1143	B-6	C1701	C-3	R1201	D-3	R1802	B-4
P1102	B-1	L1270	B-2	C1150	D-6	C1702	C-3	R1205	D-4	R1803	B-4
P1103	C-1	L1400	C-3	C1151	C-6	C1703	D-3	R1206	D-4	**Varistor**	
Diode		L1601	B-3	C1152	D-6	C1704	D-3	R1207	D-3	VA1110	C-8
D1140	B-6	L1701	D-2	C1153	D-6	C1705	D-3	R1208	D-4		
D1151	C-6	LB1122	B-5	C1154	D-5	C1706	C-2	R1209	D-4		



DMR-EH65EE/GC/GCS/GN
Power P.C.B.
(VEP71110A)

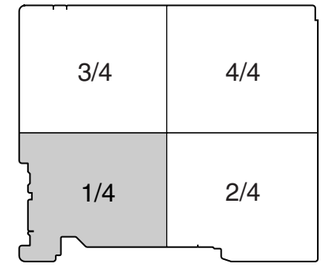
14.2. Main P.C.B.

14.2.1. Main P.C.B. (1/4 Section)



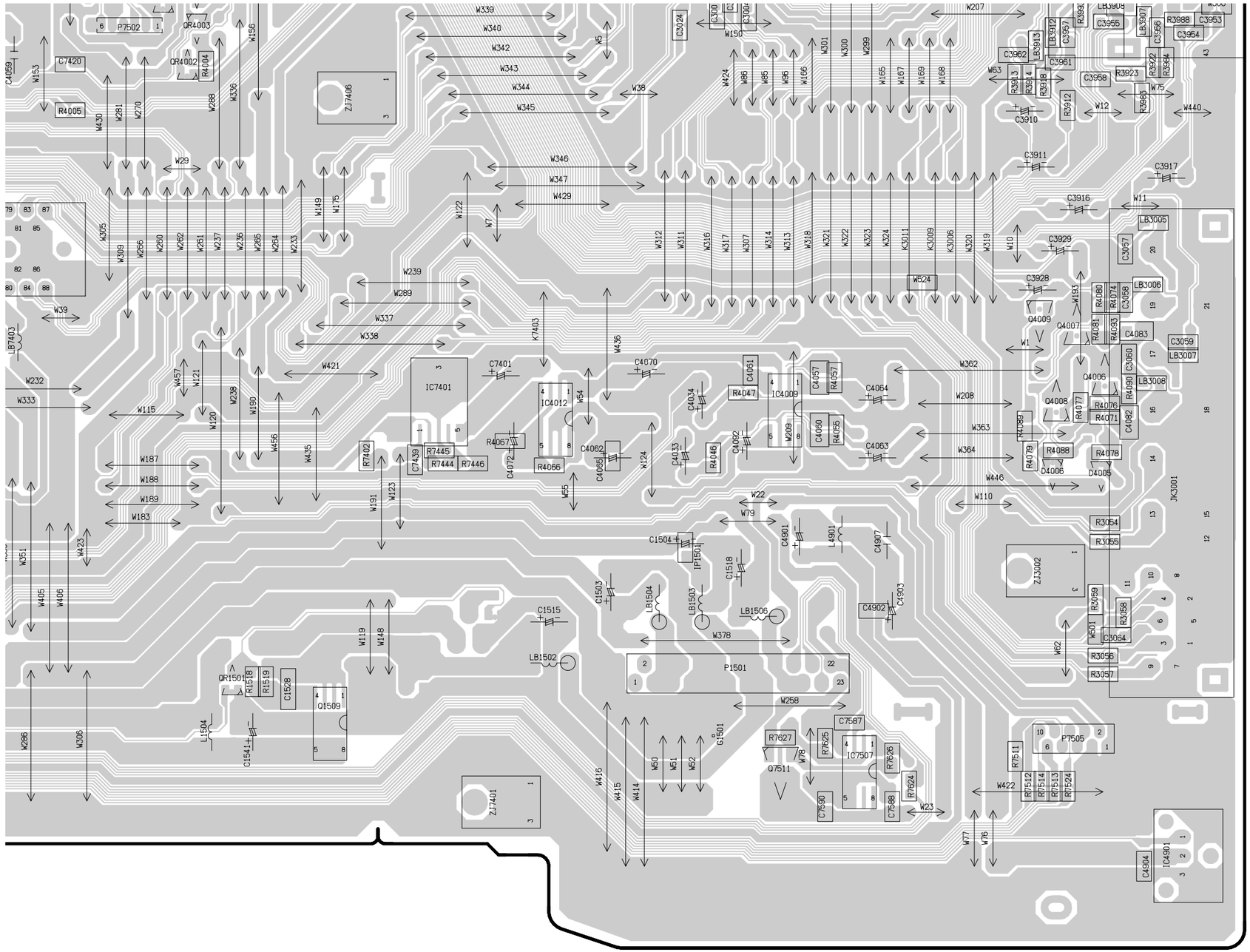
Location Map

(REAR) (FRONT)



DMR-EH65EE/GC/GCS/GN
Main P.C.B.
(RFKB79119MT:EH65EE,
RFKB79119NT: EH65GC/GCS/GN)
(1/4 Section)

14.2.2. Main P.C.B. (2/4 Section)



Location Map

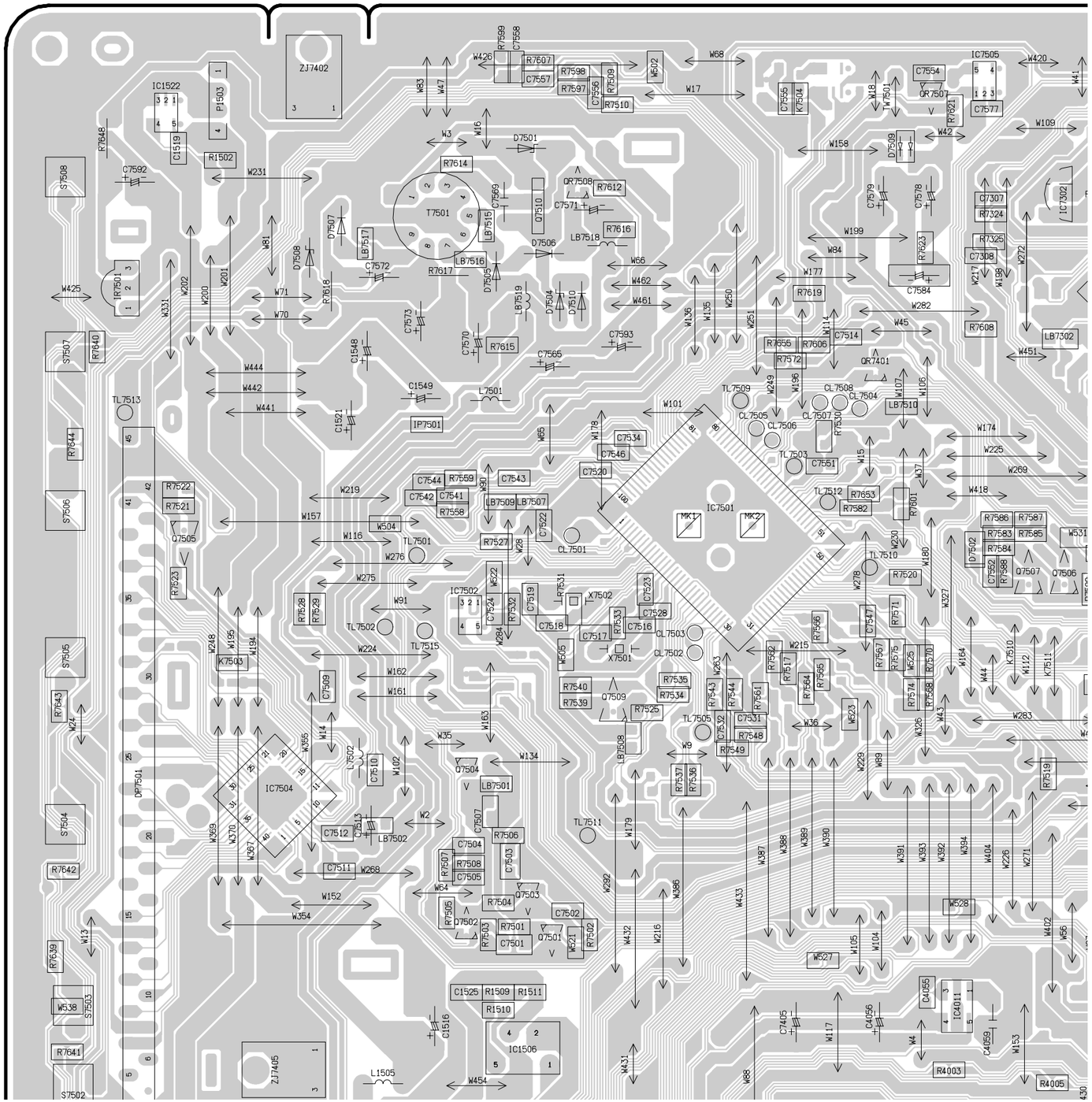
(REAR) (FRONT)

DMR-EH65EE/GC/GCS/GN
Main P.C.B.
(RFKB79119MT:EH65EE,
RFKB79119NT: EH65GC/GCS/GN)
(2/4 Section)

5 6 7 8

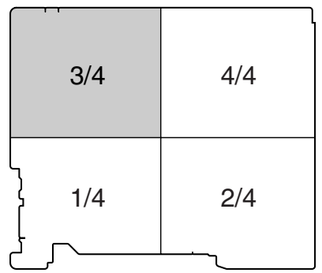
14.2.3. Main P.C.B. (3/4 Section)

Main P.C.B.



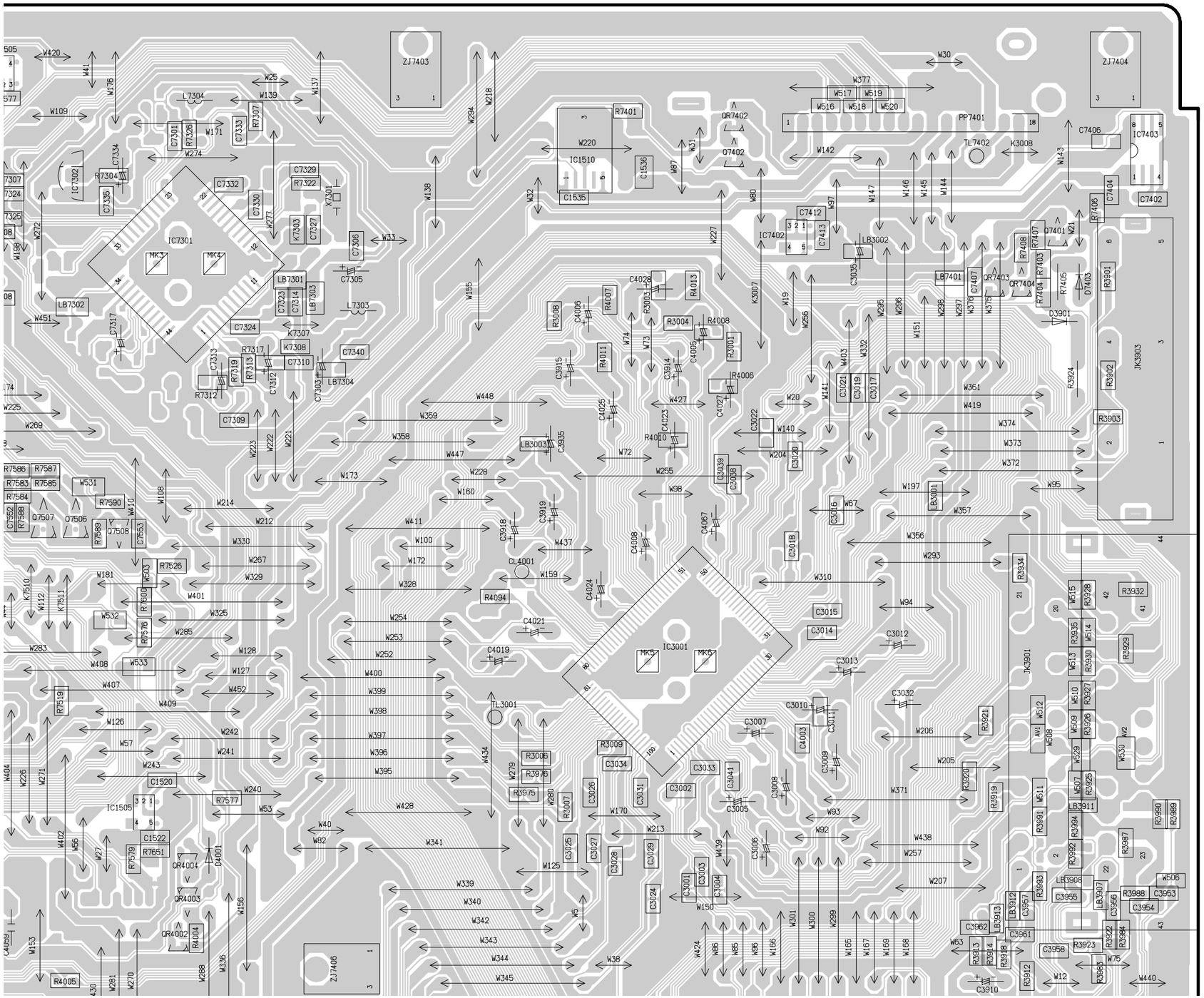
Location Map

(REAR) (FRONT)



DMR-EH65EE/GC/GCS/GN
Main P.C.B.
(RFKB79119MT:EH65EE,
RFKB79119NT: EH65GC/GCS/GN)
(3/4 Section)

14.2.4. Main P.C.B. (4/4 Section)



DMR-EH65EE/GC/GCS/GN
Main P.C.B.
(RFKB79119MT:EH65EE,
RFKB79119NT: EH65GC/GCS/GN)
(4/4 Section)

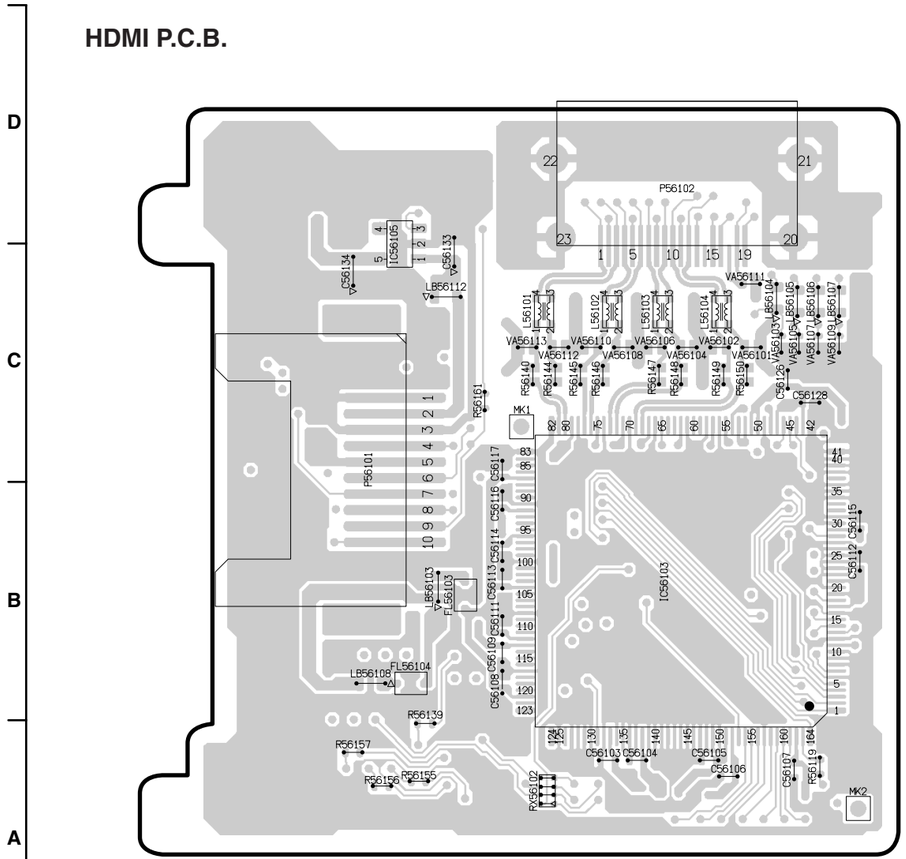
14.2.5. Main P.C.B. Address Information

Main P.C.B.

Integrated Circuit	
IC1505	D-5
IC1506	C-3
IC1507	B-3
IC1510	F-6
IC1520	B-4
IC1521	B-4
IC1522	F-2
IC3001	D-6
IC4009	B-7
IC4011	D-4
IC4012	B-6
IC4901	A-8
IC7301	F-5
IC7302	F-4
IC7401	B-6
IC7402	F-7
IC7403	F-8
IC7404	B-3
IC7501	E-3
IC7502	E-3
IC7504	D-2
IC7505	F-4
IC7507	A-7
Transistor	
Q1501	C-2
Q1509	B-5
Q4006	C-8
Q4007	C-7
Q4008	B-7
Q4009	C-7
Q7401	F-8
Q7402	F-7
Q7501	D-3
Q7502	D-3
Q7503	D-3
Q7504	D-3
Q7505	E-2
Q7506	E-4
Q7507	E-4
Q7508	E-5
Q7509	D-3
Q7510	F-3
Q7511	A-7
Transistor-resistor	
QR1501	B-5
QR1503	C-2
QR4002	C-5
QR4003	D-5
QR4004	D-5
QR7401	E-4
QR7402	F-7
QR7403	F-7
QR7404	F-7
QR7507	F-4
QR7508	F-3
Test Point	
CL4001	E-6
CL7501	E-3
CL7502	E-3
CL7503	E-3
CL7504	E-4
CL7505	E-4
CL7506	E-4
CL7507	E-4
CL7508	E-4
TL3001	D-6
TL7401	B-3
TL7402	F-7
TL7501	E-3
TL7502	E-2
TL7503	E-4
TL7505	D-3
TL7509	E-4
TL7510	E-4
TL7511	D-3
TL7512	E-4
TL7513	E-2
TL7514	C-2
TL7515	E-3
TW7501	F-4
Connector	
JK3001	B-8
JK3002	B-2
JK3901	D-8
JK3903	E-8
P1501	B-6
P1503	F-2
P7402	C-4
P7505	A-7
PP7401	F-7
Diode	
D3901	E-8
D4001	D-5
D4005	B-8
D4006	B-7
D7403	F-8
D7501	F-3
D7502	E-4
D7504	F-3
D7505	F-3
D7506	F-3
D7507	F-2
D7508	F-2
D7509	F-4
D7510	F-3
Crystal Osillator	
X7301	F-5
X7501	E-3
X7502	E-3
IC Protector	
IP1501	B-6
IP7501	E-3
IR7501	F-2
Coil	
L1504	B-5
L1505	C-2
L4901	B-7
L7303	E-5
L7304	F-5
L7401	C-4
L7402	C-3
L7501	E-3
L7502	D-2
LB1502	B-6
LB1503	B-6
LB1504	B-6
LB1506	B-6
LB3001	E-7
LB3002	F-7
LB3003	E-6
LB3005	C-8
LB3006	C-8
LB3007	C-8
LB3008	C-8
LB3009	B-2
LB3010	B-2
LB3011	B-2
LB3012	B-2
LB3013	C-2
LB3907	D-8
LB3908	D-8
LB3911	D-8
LB3912	D-7
LB3913	D-7
LB7301	F-5
LB7302	E-4
LB7303	F-5
LB7304	E-5
LB7401	F-7
LB7402	C-4
LB7403	C-4
LB7404	C-3
LB7405	C-4
LB7406	C-3
LB7407	C-3
LB7408	C-3
LB7409	C-4
LB7410	C-4
LB7411	C-4
LB7412	B-4
LB7413	C-3
LB7414	C-3
LB7415	C-4
LB7416	C-3
LB7417	C-4
LB7418	C-4
LB7419	C-4
LB7420	B-4
LB7501	D-3
LB7502	D-2
LB7507	E-3
LB7508	D-3
LB7509	E-3
LB7510	E-4
LB7515	F-3
LB7516	F-3
LB7517	F-2
LB7518	F-3
LB7519	F-3
Capacitor	
C1503	B-6
C1504	B-6
C1508	B-4
C1509	C-4
C1510	B-4
C1511	B-4
C1512	B-4
C1515	B-6
C1516	D-3
C1518	B-6
C1519	F-2
C1520	D-5
C1521	E-2
C1522	D-5
C1523	C-3
C1524	C-3
C1525	D-3
C1526	C-2
C1527	C-2
C1528	B-5
C1529	C-2
C1535	F-6
C1536	F-6
C1538	B-3
C1539	B-3
C1540	B-3
C1541	B-5
C1548	E-2
C1549	E-3
C3001	D-6
C3002	D-6
C3003	D-6
C3004	D-6
C3005	D-6
C3006	D-7
C3007	D-7
C3008	D-7
C3009	D-7
C3010	D-7
C3011	D-7
C3012	D-7
C3013	D-7
C3014	D-7
C3015	E-7
C3016	E-7
C3017	E-7
C3018	E-7
C3019	E-7
C3020	E-7
C3021	E-7
C3022	E-7
C3024	D-6
C3025	D-6
C3026	D-6
C3027	D-6
C3028	D-6
C3029	D-6
C3031	D-6
C3032	D-7
C3033	D-6
C3034	D-6
C3035	F-7
C3038	E-7
C3039	E-6
C3041	D-6
C3057	C-8
C3058	C-8
C3059	C-8
C3060	C-8
C3064	B-8
C3070	C-2
C3071	C-2
C3072	B-2
C3910	C-7
C3911	C-7
C3914	E-6
C3915	E-6
C3916	C-7
C3917	C-8
C3918	E-6
C3919	E-6
C3928	C-7
C3929	C-7
C3935	E-6
C3953	D-8
C3954	D-8
C3955	D-8
C3956	D-8
C3957	D-7
C3958	C-8
C3961	D-7
C3962	D-7
C4003	D-7
C4005	E-6
C4006	F-6
C4008	E-6
C4019	D-6
C4021	D-6
C4023	E-6
C4024	E-6
C4025	E-6
C4027	E-6
C4028	F-6
C4033	B-6
C4034	C-6
C4055	D-4
C4056	D-4
C4057	C-7
C4059	D-4
C4060	B-7
C4061	C-6
C4062	B-6
C4063	B-7
C4064	C-7
C4065	B-6
C4067	E-6
C4070	C-6
C4072	B-6
C4082	B-8
C4083	C-8
C4092	B-6
C4901	B-7
C4902	B-7
C4903	B-7
C4904	A-8
C4907	B-7
C7301	F-5
C7303	E-5
C7305	F-5
C7306	F-5
C7307	F-4
C7308	F-4
C7309	E-5
C7310	E-5
C7312	E-5
C7313	E-5
C7314	E-5
C7317	E-5
C7323	E-5
C7324	E-5
C7329	F-5
C7330	F-5
C7332	F-5
C7333	F-5
C7334	F-5
C7335	F-5
C7340	E-5
C7401	C-6
C7402	F-8
C7403	C-3
C7404	F-8
C7405	D-4
C7406	F-8
C7407	F-7
C7412	F-7
C7413	F-7
C7414	C-3
C7415	C-3
C7417	B-3
C7418	B-3
C7419	C-3
C7439	B-5
C7501	D-3
C7502	D-3
C7503	D-3
C7504	D-3
C7505	D-3
C7506	D-3
C7507	D-3
C7509	D-2
C7511	D-2
C7512	D-2
C7513	D-2
C7514	E-4
C7516	E-3
C7517	E-3
C7518	E-3
C7519	E-3
C7520	E-3
C7522	E-3
C7523	E-3
C7524	E-3
C7528	E-3
C7531	D-4
C7532	D-3
C7534	E-3
C7541	E-3
C7542	E-3
C7543	E-3
C7544	E-3
C7546	E-3
C7547	E-4
C7551	E-4
C7552	E-4
C7553	E-5
C7554	F-4
C7555	F-4
C7556	F-3
C7557	F-3
C7558	F-3
C7565	E-3
C7569	F-3
C7570	F-3
C7571	F-3
C7572	F-2
C7573	F-3
C7577	F-4
C7578	F-4
C7579	F-4
C7584	F-4
C7587	B-7
C7588	A-7
C7590	A-7
C7592	F-2
C7593	F-3
Resistor	
R1502	F-2
R1505	C-2
R1506	C-2
R1507	C-2
R1509	D-3
R1510	D-3
R1511	D-3
R1518	B-5
R1519	B-5
R3001	E-7
R3003	F-6
R3004	E-6
R3006	D-6
R3007	D-6
R3008	E-6
R3009	D-6
R3054	B-8
R3055	B-8
R3056	B-8
R3057	B-8
R3058	B-8
R3059	B-8
R3060	B-2
R3061	B-2
R3062	B-2
R3901	F-8
R3902	E-8
R3903	E-8
R3912	C-7
R3913	C-7
R3914	C-7
R3918	C-7
R3919	D-7
R3920	D-7
R3921	D-7
R3922	D-8
R3923	C-8
R3924	E-8
R3925	D-8
R3926	D-8
R3927	D-8
R3928	E-8
R3929	D-8
R3930	D-8
R3932	E-8
R3934	E-7
R3935	D-8
R3975	D-6
R3976	D-6
R3983	C-8
R3984	D-8
R3987	D-8
R3988	D-8
R3989	D-8
R3990	D-8
R3991	D-7
R3992	D-8
R3993	D-7
R3994	D-8
R4003	C-4
R4004	C-5
R4005	C-4
R4006	E-6
R4007	E-6
R4008	E-6
R4010	E-6
R4011	E-6
R4013	F-6
R4046	B-6
R4047	C-6
R4055	B-7
R4057	C-7
R4066	B-6
R4067	B-6
R4071	B-8
R4074	C-8
R4076	B-8
R4077	B-7
R4078	B-8
R4079	B-7
R4080	C-8
R4081	C-8
R4088	B-7
R4089	B-7
R4090	C-8
R4093	C-8
R4094	E-6
R7304	F-5
R7307	F-5
R7312	E-5
R7313	E-5
R7317	E-5
R7319	E-5
R7322	F-5
R7324	F-4
R7325	F-4
R7326	F-5
R7401	F-6
R7402	B-5
R7403	F-7
R7404	F-7
R7405	F-8
R7406	F-8
R7407	F-7
R7408	F-7
R7409	B-4
R7410	C-4
R7411	B-3
R7412	B-3
R7414	B-3
R7444	B-6
R7445	B-6
R7446	B-6
R7448	C-4
R7501	D-3
R7502	D-3
R7503	D-3
R7504	D-3
R7505	D-3
R7506	D-3
R7507	D-3
R7508	D-3
R7509	F-3
R7510	F-3
R7511	A-7
R7512	A-7
R7513	A-7
R7514	A-7
R7517	E-4
R7519	D-4
R7520	E-4
R7521	E-2
R7522	E-2
R7523	E-2
R7524	A-7
R7525	D-3
R7526	E-5
R7527	E-3
R7528	E-2
R7529	E-2
R7530	E-4
R7531	E-3
R7532	E-3
R7533	E-3
R7534	D-3
R7535	E-3
R7536	D-3
R7537	D-3
R7539	D-3
R7540	D-3
R7543	D-3
R7544	D-3
R7548	D-4
R7549	D-3
R7558	E-3
R7559	E-3
R7561	D-4
R7562	E-4
R7564	D-4
R7565	E-4
R7566	E-4
R7567	E-4
R7568	D-4
R7570	E-4
R7571	E-4
R7572	E-4
R7574	D-4
R7575	E-4
R7576	D-5
R7577	D-5
R7579	D-5
R7582	E-4
R7583	E-4
R7584	E-4
R7585	E-4
R7586	E-4
R7587	E-4
R7588	E-4
R7589	E-4
R7590	E-5
R7597	F-3
R7598	F-3
R7599	F-3
R7600	E-5
R7601	E-4
R7606	E-4
R7607	F-3
R7608	F-4
R7612	F-3
R7614	F-3
R7615	E-3
R7616	F-3
R7617	F-3
R7618	F-2
R7619	F-4
R7621	F-4
R7623	F-4
R7624	A-7
R7625	A-7
R7626	A-7
R7627	A-7
R7639	D-2
R7640	E-2
R7641	C-2
R7642	D-2
R7643	D-2
R7644	E-2
R7648	F-2
R7651	D-5
R7653	E-4
R7655	E-4
Switch	
S7501	C-2
S7502	C-2
S7503	D-2
S7504	D-2
S7505	E-2
S7506	E-2
S7507	E-2
S7508	F-2
Transformer	
T7501	F-3
Display	
DP7501	D-2

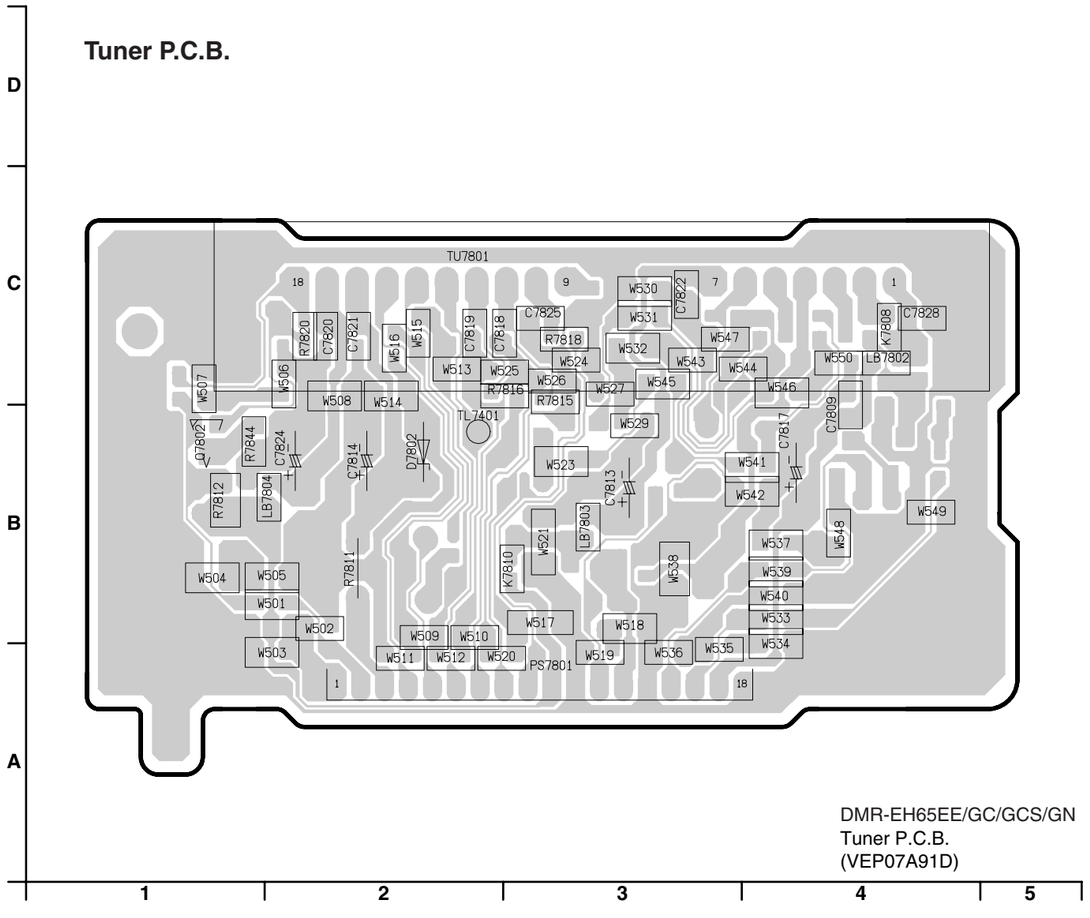
14.3. HDMI P.C.B.

HDMI P.C.B.



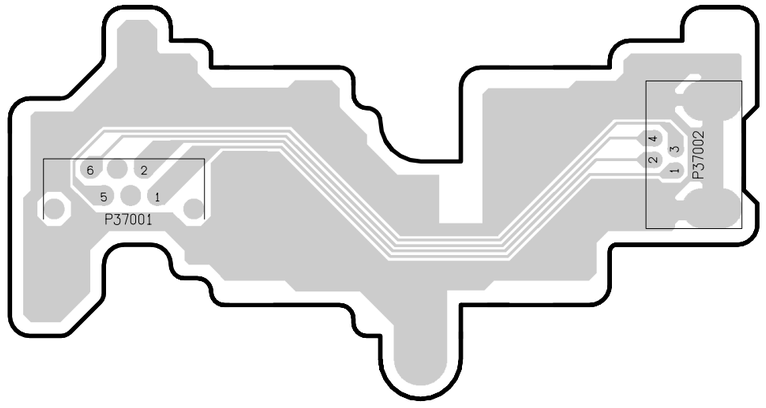
14.4. Tuner P.C.B. and DV Jack P.C.B.

Tuner P.C.B.



DMR-EH65EE/GC/GCS/GN
Tuner P.C.B.
(VEP07A91D)

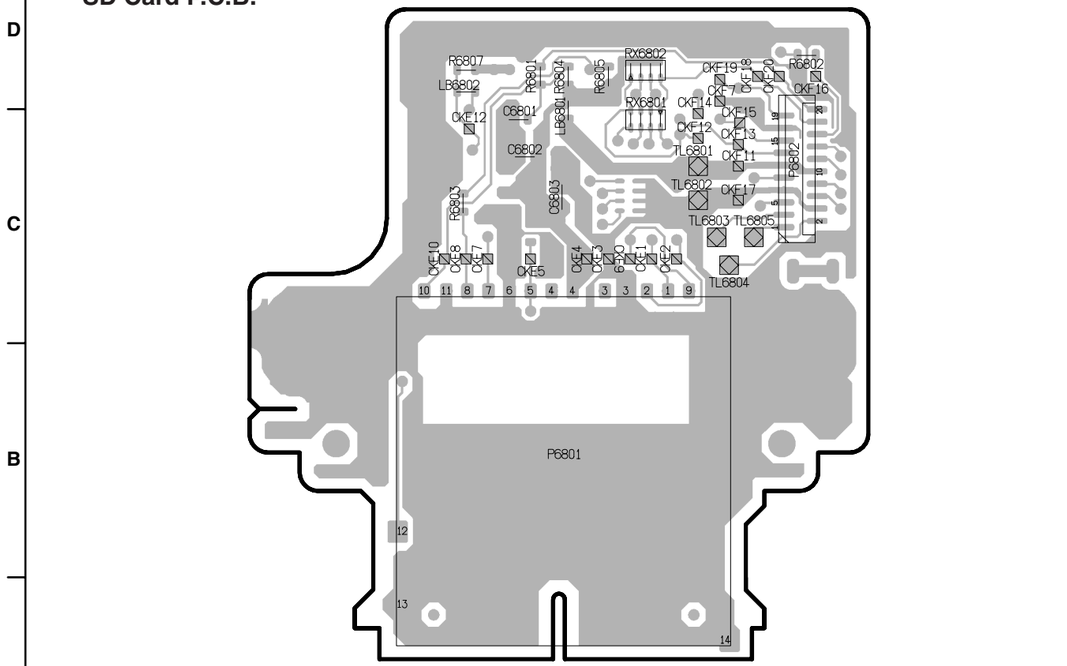
DV Jack P.C.B.



DMR-EH65EE/GC/GCS/GN
DV Jack P.C.B.
(VEP73135A)

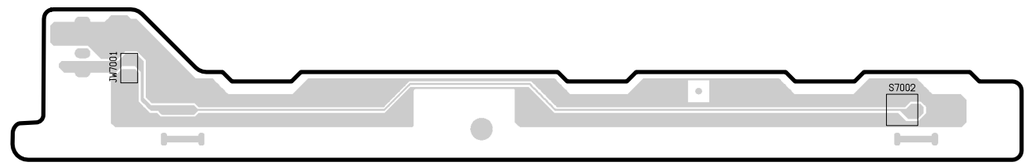
14.5. SD Card P.C.B. and Front (L) P.C.B.

SD Card P.C.B.



DMR-EH65EE/GC/GCS/GN
SD Card P.C.B.
(VEP73136A)

Front (L) P.C.B.



DMR-EH65EE/GC/GCS/GN
Front (L) P.C.B.
(VEP70161A)

15 Appendix for Schematic Diagram

15.1. Voltage and Waveform Chart

Note)

Circuit voltage and waveform described herein shall be regarded as reference information when probing defect point, because it may differ from an actual measuring value due to difference of Measuring instrument and its measuring condition and product itself.

15.1.1. Power P.C.B.

Ref No.	IC1150										IC1200									
MODE	1	2	3	4	5	6	7	8	9		1	2	3							
REC	3.0	1.5	0	11.6	0	-	310	-	-1523		8.3	2.5	0							
PLAY	3.0	1.5	0	11.6	0	-	310	-	-1523		8.3	2.5	0							
STOP	3.0	1.5	0	11.6	0	-	310	-	-1538		8.3	2.5	0							
Ref No.	IC1601										IC1701									
MODE	1	2	3	4	5	6	7	8			1	2	3	4	5	6	7	8		
REC	12.3	4.5	1.2	1.3	0.8	0	7.6	12.3			12.4	4.5	1.2	1.3	0	0	8.5	12.4		
PLAY	12.3	4.5	1.2	1.3	0.8	0	7.6	12.3			12.4	4.5	1.2	1.3	0	0	8.5	12.4		
STOP	12.3	4.5	1.2	1.3	0.8	0	7.6	12.3			12.4	4.5	1.2	1.3	1.2	0	8.5	12.4		
Ref No.	Q1200					Q1600									Q1706					
MODE	1	2	3	4		1	2	3	4	5	6	7	8		1	2	3	4	5	6
REC	9.3	8.3	0	1.5		12.3	12.3	12.3	7.6	6.1	6.1	6.1	6.1		4.1	4.1	8.5	12.4	4.1	4.1
PLAY	9.3	8.3	0	1.5		12.3	12.3	12.3	7.6	6.1	6.1	6.1	6.1		4.1	4.1	8.5	12.4	4.1	4.1
STOP	9.3	8.3	0	1.5		12.3	12.3	12.3	7.6	6.1	6.1	6.1	6.1		4.1	4.1	8.5	12.4	4.1	4.1
Ref No.	QR1800				QR1801															
MODE	E	C	B		E	C	B													
REC	11.9	0	12.3		0	4.5	0													
PLAY	11.9	0	12.3		0	4.5	0													
STOP	11.9	0	12.3		0	4.5	0													

15.1.2. Main P.C.B.

Ref No.	IC1505						IC1506													
MODE	1	2	3	4	5		1	2	3	4	5									
REC	4.1	0	4.9	-	3.3		4.8	6.1	0	5.2	5.2									
PLAY	4.1	0	4.9	-	3.3		4.8	6.1	0	5.2	5.2									
STOP	4.1	0	4.9	-	3.3		4.8	6.1	0	5.2	5.2									
Ref No.	IC1507									IC1510						IC1520				
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5		1	2	3	4	5
REC	5.1	-	3.4	0	6.1	-	-	6.1		6.1	4.9	5.0	-	0		6.1	0	4.8	-	5.1
PLAY	5.1	-	3.4	0	6.1	-	-	6.1		6.1	4.9	5.0	-	0		6.1	0	4.8	-	5.1
STOP	5.1	-	3.4	0	6.1	-	-	6.1		6.1	4.9	5.0	-	0		6.1	0	4.8	-	5.1
Ref No.	IC1521									IC1522										
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5						
REC	3.3	-	2.0	0	4.8	-	-	4.1		-	0	0	5.0	5.1						
PLAY	3.3	-	2.0	0	4.8	-	-	4.1		-	0	0	5.0	5.1						
STOP	3.3	-	2.0	0	4.8	-	-	4.1		-	0	0	5.0	5.1						
Ref No.	IC3001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	2.0	2.5	1.6	0	1.6	5.0	1.6	5.0	0.4	0.3	1.6	0.4	-	1.7	1.7	1.6	0.4	0	1.7	1.7
PLAY	2.0	2.5	1.6	0	1.6	5.0	1.6	5.0	0.4	0.3	1.6	0.4	-	1.7	1.7	1.6	0.4	0	1.7	1.7
STOP	2.0	2.5	1.6	0	1.6	5.0	1.6	5.0	0.4	1.6	1.6	0.4	-	1.7	1.7	1.6	0.4	0	1.7	1.7
Ref No.	IC3001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	0	1.7	1.7	1.7	5.0	1.4	0.1	1.4	0	2.1	1.6	0	1.6	0	2.1	-	1.6	-	1.6	5.0
PLAY	0	1.7	1.7	1.7	5.0	1.4	0.1	1.4	0	2.1	1.6	0	1.6	0	2.1	-	1.6	-	1.6	5.0
STOP	0	1.7	1.6	1.7	5.0	1.4	0.2	1.4	0	2.1	1.6	0	1.6	0	2.1	-	1.6	-	1.6	5.0
Ref No.	IC3001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	1.6	5.1	2.0	0	2.0	11.6	1.6	2.0	4.5	4.4	4.4	4.0	4.5	4.5	-	4.5	9.1	4.4	4.4	4.5
PLAY	1.6	5.1	2.0	0	2.0	11.6	1.6	2.0	4.5	4.4	4.4	4.0	4.5	4.5	-	4.5	9.1	4.4	4.4	4.5
STOP	1.6	5.1	2.0	0	2.0	11.6	1.6	2.0	4.5	4.5	4.0	4.5	4.5	4.4	-	3.9	9.1	4.0	4.3	3.7
Ref No.	IC3001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
REC	4.5	4.5	-	4.5	9.0	0	0	0	0	0	4.5	4.5	4.5	4.5	0	-	9.5	4.5	4.5	0
PLAY	4.5	4.5	-	4.5	9.0	0	0	0	0	0	4.5	4.5	4.5	4.5	0	-	9.5	4.5	4.5	0
STOP	3.7	3.7	-	3.8	9.0	0	0	0	0	0	4.5	4.5	4.5	4.5	0	-	0.3	4.5	4.5	0
Ref No.	IC3001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
REC	2.1	5.0	1.5	5.1	2.1	4.5	3.6	4.8	4.6	5.0	2.0	2.8	2.1	5.1	2.0	0	2.1	0	2.0	2.5
PLAY	2.1	5.0	1.5	5.1	2.1	4.5	3.6	4.8	4.6	5.0	2.0	2.8	2.1	5.1	2.0	0	2.1	0	2.0	2.5
STOP	4.7	5.0	1.5	5.1	2.1	4.5	3.6	4.8	4.6	5.1	5.0	2.8	2.1	5.1	2.0	0	2.1	0	2.0	2.5

Ref No.	IC4009									IC4011										
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5						
REC	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		3.4	0	4.8	6.1	5.0						
PLAY	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		3.4	0	4.8	6.1	5.0						
STOP	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		3.4	0	4.8	6.1	5.0						
Ref No.	IC4012									IC4901										
MODE	1	2	3	4	5	6	7	8		1	2	3								
REC	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		1.7	5.0	0								
PLAY	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		1.7	5.0	0								
STOP	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		1.7	5.0	0								
Ref No.	IC7301																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	2.4	2.4	2.4	0	0	2.4	0	2.4	0	2.4	0	-	0	2.9	2.6	0	0	2.8	0	0
PLAY	2.4	2.4	2.4	0	0	2.4	0	2.4	0	2.4	0	-	0	2.9	2.6	0	0	2.8	0	0
STOP	2.4	2.4	2.4	0	0	2.4	0	2.4	0	2.4	0	-	0	2.9	2.6	0	0	2.8	0	0
Ref No.	IC7301																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	2.3	0	-	1.5	2.4	1.4	0	5.0	5.0	5.0	2.9	2.4	2.4	2.5	2.5	0	-	2.4	-	-
PLAY	2.3	0	-	1.5	2.4	1.4	0	5.0	5.0	5.0	2.9	2.4	2.4	2.5	2.5	0	-	2.4	-	-
STOP	2.3	0	-	1.5	2.4	1.4	0	5.0	5.0	5.0	2.9	2.4	2.4	2.5	2.5	0	-	2.4	-	-
Ref No.	IC7301																			
MODE	41	42	43	44																
REC	2.4	-	-	0																
PLAY	2.4	-	-	0																
STOP	2.4	-	-	0																
Ref No.	IC7302				IC7401						IC7402									
MODE	1	2	3		1	2	3	4	5		1	2	3	4	5					
REC	5.0	0	4.9		12.4	4.2	11.6	2.6	0		6.1	0	6.1	-	5.1					
PLAY	5.0	0	4.9		12.4	4.2	11.6	2.6	0		6.1	0	6.1	-	5.1					
STOP	5.0	0	4.9		12.4	4.2	11.6	2.6	0		6.1	0	6.1	-	5.1					
Ref No.	IC7403									IC7404										
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8			
REC	5.0	-	3.4	0	4.2	-	-	6.1		0	0	0	0	3.2	3.2	0	3.3			
PLAY	5.0	-	3.4	0	4.2	-	-	6.1		0	0	0	0	3.2	3.2	0	3.3			
STOP	5.0	-	3.4	0	4.2	-	-	6.1		0	0	0	0	3.2	3.2	0	3.3			
Ref No.	IC7501																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	0.3	-	4.9	3.8	0.8	0.8	4.4	0	0	2.1	1.2	4.9	1.4	0	2.1	3.3	4.9	3.3	3.2	3.3
PLAY	0.3	-	4.9	3.8	0.8	0.8	4.4	0	0	0.7	1.2	4.9	1.4	0	2.1	3.3	4.9	3.3	3.2	3.3
STOP	0.3	-	4.9	4.5	0.9	0.9	4.4	0	0	0.7	1.2	4.9	1.4	0	2.1	3.3	4.9	3.3	3.2	3.3
Ref No.	IC7501																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	3.1	-	3.2	0	-	-	-	-	4.8	4.6	3.3	3.3	0	4.8	3.3	3.2	3.3	-	0	4.9
PLAY	3.1	-	3.2	0	-	-	-	-	4.8	4.6	3.3	3.3	0	4.8	3.3	3.2	3.3	-	0	4.9
STOP	3.1	-	3.2	0	-	-	-	-	4.8	4.6	3.3	3.3	0	4.8	3.3	3.2	3.3	-	0	4.9
Ref No.	IC7501																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	0	4.9	4.9	4.8	0	4.9	5.0	5.0	4.9	0	4.9	-	0	4.8	0	0	0	0	-	5.0
PLAY	0	4.9	4.9	4.8	0	4.9	5.0	5.0	4.9	0	4.9	-	0	4.8	0	0	0	0	-	5.0
STOP	4.9	4.9	4.9	4.8	0	4.9	5.0	5.0	4.9	0	4.9	-	0	4.8	0	0	0	0	-	5.0
Ref No.	IC7501																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
REC	0	5.0	0	0	4.9	-	-	-	-	-	-	-	4.9	0	5.0	0	-	0	0	-
PLAY	0	5.0	0	0	4.9	-	-	-	-	-	-	-	4.9	0	5.0	0	-	0	0	-
STOP	0	5.0	0	0	4.9	-	-	-	-	-	-	-	4.9	0	5.0	0	-	0	0	-
Ref No.	IC7501																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
REC	3.3	0	0	4.7	3.2	5.0	5.0	5.0	2.0	5.0	0	0	2.5	1.2	1.6	0	0	2.0	5.0	0
PLAY	3.3	0	0	4.7	3.2	5.0	5.0	5.0	2.0	5.0	0	0	2.5	1.2	1.6	0	0	2.0	5.0	0
STOP	3.3	0	0	4.7	0	5.0	5.0	5.0	2.0	5.0	0	0	2.5	1.2	1.6	0	0	2.0	5.0	0
Ref No.	IC7502																			
MODE	1	2	3	4	5															
REC	0	0	-	4.9	5.0															
PLAY	0	0	-	4.9	5.0															
STOP	0	0	-	4.9	5.0															
Ref No.	IC7504																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	-	-	0	0	2.2	2.2	5.0	4.9	4.4	2.5	-18.1	-21.1	-21.1	-	-21.8	-21.1	-	-17.6	-17.6	-18.1
PLAY	-	-	0	0	2.2	2.2	5.0	4.9	4.4	2.5	-18.1	-17.6	-17.6	-	-21.8	-17.6	-	-21.1	-21.1	-18.1
STOP	-	-	0	0	2.2	2.2	5.0	4.9	4.4	0.8	-18.1	-21.1	-21.1	-	-21.8	-21.1	-	-17.6	-17.6	-18.1
Ref No.	IC7504																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	-17.6	-14.2	-18.1	-14.2	-21.0	-17.7	-21.0	-10.8	-17.7	-17.6	-17.6	-17.6	-17.7	-17.6	-17.7	-17.9	-17.9	-	-	-
PLAY	-17.6	-0.6	-18.1	-4.0	-14.3	-17.7	-10.8	-4.0	-17.7	-10.8	-21.1	-21.1	-17.7	-21.4	-17.7	-4.4	-4.4	-	-	-
STOP	-17.6	-14.2	-18.1	-14.2	-21.0	-17.7	-21.0	-10.8	-17.7	-17.6	-17.6	-17.6	-17.7	-17.6	-17.7	-17.9	-17.9	-	-	-
Ref No.	IC7505						IC7507													
MODE	1	2	3	4	5		1	2	3	4	5	6	7	8						
REC	4.9	5.1	0	-	-		5.7	1.3	1.3	0	0.2	0.3	11.2	12.3						
PLAY	4.9	5.1	0	-	-		5.7	1.3	1.3	0	0.2	0.3	11.2	12.3						
STOP	4.9	5.1	0	-	-		5.7	1.3	1.3	0	0.3	0.2	11.2	12.3						

Ref No.	Q1501									Q1509										
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8			
REC	5.2	5.2	5.2	0.6	5.1	5.1	5.1	5.1		12.4	12.4	12.4	6.2	12.3	12.3	12.3	12.3			
PLAY	5.2	5.2	5.2	0.6	5.1	5.1	5.1	5.1		12.4	12.4	12.4	6.2	12.3	12.3	12.3	12.3			
STOP	5.2	5.2	5.2	0.6	5.1	5.1	5.1	5.1		12.4	12.4	12.4	6.2	12.3	12.3	12.3	12.3			
Ref No.	Q4006				Q4007					Q4008				Q4009				Q7401		
MODE	E	C	B		E	C	B			E	C	B		E	C	B		E	C	B
REC	0	0	-0.1		0	0	-0.1			0	0	-0.1		0	0	-0.1		0	11.6	0
PLAY	0	0	-0.1		0	0	-0.1			0	0	-0.1		0	0	-0.1		0	11.6	0
STOP	0	0	-0.1		0	0	-0.1			0	0	-0.1		0	0	-0.1		0	11.6	0
Ref No.	Q7402				Q7501					Q7502				Q7503				Q7504		
MODE	E	C	B		E	C	B			E	C	B		E	C	B		E	C	B
REC	0	0	4.9		2.7	0	2.1			2.0	5.0	1.6		2.7	0	2.1		2.0	5.0	1.6
PLAY	0	0	4.9		2.7	0	2.1			2.0	5.0	1.6		2.7	0	2.1		2.0	5.0	1.6
STOP	0	0	4.9		2.7	0	2.1			2.0	5.0	1.6		2.7	0	2.1		2.0	5.0	1.6
Ref No.	Q7505				Q7506					Q7507				Q7508				Q7509		
MODE	E	C	B		E	C	B			E	C	B		E	C	B		E	C	B
REC	-18.1	5.0	-18.0		0	5.0	0			0	0	4.6		0	4.6	0		4.9	3.3	3.3
PLAY	-18.1	5.0	-18.0		0	5.0	0			0	0	4.6		0	4.6	0		4.9	3.3	3.3
STOP	-18.1	5.0	-18.0		0	5.0	0			0	0	5.1		0	5.1	0.1		4.9	3.3	3.3
Ref No.	Q7510				Q7511															
MODE	E	C	B		E	C	B													
REC	0	9.2	-0.2		5.1	12.3	5.5													
PLAY	0	9.2	-0.1		5.1	12.3	5.5													
STOP	0	9.2	-0.2		5.1	12.3	5.5													
Ref No.	QR1501				QR1503					QR4002				QR4003				QR4004		
MODE	E	C	B		E	C	B			E	C	B		E	C	B		E	C	B
REC	0	0	4.9		0	0	4.9			5.1	-0.1	5.1		0	0	2.3		0	5.1	0
PLAY	0	0	4.9		0	0	4.9			5.1	-0.1	5.1		0	0	2.3		0	5.1	0
STOP	0	0	4.9		0	0	4.9			5.1	-0.1	5.1		0	0	2.3		0	5.1	0
Ref No.	QR7401				QR7402					QR7403				QR7404						
MODE	E	C	B		E	C	B			E	C	B		E	C	B				
REC	0	4.2	0		38.1	38.0	0			0	0	4.9		0	0	0				
PLAY	0	4.2	0		38.1	38.0	0			0	0	4.9		0	0	0				
STOP	0	4.2	0		38.1	38.0	0			0	0	4.9		0	0	0				
Ref No.	QR7507				QR7508															
MODE	E	C	B		E	C	B													
REC	0	0	4.9		0	-0.2	0													
PLAY	0	0	4.9		0	-0.1	0													
STOP	0	0	4.9		0	-0.2	0													

15.1.3. HDMI P.C.B.

Ref No.	IC56101																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	0	1.5	1.6	1.2	1.6	0	1.6	0	1.2	0	1.3	0	1.6	0	1.6	1.3	1.6	1.5	0	3.3
PLAY	0	1.5	1.6	1.2	1.6	0	1.6	0	1.2	0	1.3	0	1.6	0	1.6	1.3	1.6	1.5	0	3.3
STOP	0	1.5	1.6	1.2	1.6	0	1.6	0	1.2	0	1.3	0	1.6	0	1.6	1.3	1.6	1.5	0	3.3
Ref No.	IC56102																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	0	0.7	1.5	1.2	1.0	0.9	1.2	0.7	1.7	0	1.6	0.7	1.1	0.9	0.9	1.5	1.1	0	0	3.3
PLAY	0	0.7	1.5	1.2	1.0	0.9	1.2	0.7	1.7	0	1.6	0.7	1.1	0.9	0.9	1.5	1.1	0	0	3.3
STOP	0	0.7	1.5	1.2	1.0	0.9	1.2	0.7	1.7	0	1.6	0.7	1.1	0.9	0.9	1.5	1.1	0	0	3.3
Ref No.	IC56103																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	1.6	1.2	0	0	1.2	0	1.6	0	0	0	1.5	0	3.3	3.2	3.2	0	3.3	1.5	3.3	0
PLAY	1.6	1.2	0	0	1.2	0	1.6	0	0	0	1.5	0	3.3	3.2	3.2	0	3.3	1.5	3.3	0
STOP	1.6	1.2	0	0	1.2	0	1.6	0	0	0	1.5	0	3.3	3.2	3.2	0	3.3	1.5	3.3	0
Ref No.	IC56103																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	3.3	0	0	0	0	0	0	3.2	1.5	0	0	-	-	0	0	0	-	0	0	0
PLAY	3.3	0	0	0	0	0	0	3.2	1.5	0	0	-	-	0	0	0	-	0	0	0
STOP	3.3	0	0	0	0	0	0	3.2	1.5	0	0	-	-	0	0	0	-	0	0	0
Ref No.	IC56103																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	0	0	3.3	0	3.3	3.3	3.3	1.5	0	3.3	3.3	1.5	1.5	3.3	3.3	0	3.3	0	-	-
PLAY	0	0	3.3	0	3.3	3.3	3.3	1.5	0	3.3	3.3	1.5	1.5	3.3	3.3	0	3.3	0	-	-
STOP	0	0	3.3	0	3.3	3.3	3.3	1.5	0	3.3	3.3	1.5	1.5	3.3	3.3	0	3.3	0	-	-
Ref No.	IC56103																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
REC	0	3.3	-	-	3.3	0	3.3	1.2	1.2	0	3.3	0	0	0	3.3	0	0	0	3.3	0
PLAY	0	3.3	-	-	3.3	0	3.3	1.2	1.2	0	3.3	0	0	0	3.3	0	0	0	3.3	0
STOP	0	3.3	-	-	3.3	0	3.3	1.2	1.2	0	3.3	0	0	0	3.3	0	0	0	3.3	0
Ref No.	IC56103																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
REC	0	0	0	-	-	-	3.3	-	-	-	0	1.5	-	-	-	3.3	-	-	-	0
PLAY	0	0	0	-	-	-	3.3	-	-	-	0	1.5	-	-	-	3.3	-	-	-	0
STOP	0	0	0	-	-	-	3.3	-	-	-	0	1.5	-	-	-	3.3	-	-	-	0
Ref No.	IC56103																			
MODE	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
REC	-	-	-	-	-	-	-	0	-	-	-	3.3	1.5	-	-	-	0	-	-	-
PLAY	-	-	-	-	-	-	-	0	-	-	-	3.3	1.5	-	-	-	0	-	-	-
STOP	-	-	-	-	-	-	-	0	-	-	-	3.3	1.5	-	-	-	0	-	-	-
Ref No.	IC56103																			
MODE	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
REC	3.3	-	-	-	0	-	0	0	0	0	1.5	0	1.5	0	0	0	0	3.3	0	0
PLAY	3.3	-	-	-	0	-	0	0	0	0	1.5	0	1.5	0	0	0	0	3.3	0	0
STOP	3.3	-	-	-	0	-	0	0	0	0	1.5	0	1.5	0	0	0	0	3.3	0	0
Ref No.	IC56103																			
MODE	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
REC	0	0	0	0	0	0	0	0	0	0	3.3	1.5	1.5	0.9	1.2	1.6	0	0.7	0.9	1.0
PLAY	0	0	0	0	0	0	0	0	0	0	3.3	1.5	1.5	0.9	1.2	1.6	0	0.7	0.9	1.0
STOP	0	0	0	0	0	0	0	0	0	0	3.3	1.5	1.5	0.9	1.2	1.6	0	0.7	0.9	1.0
Ref No.	IC56103																			
MODE	161	162	163	164																
REC	0.9	1.5	1.6	1.6																
PLAY	0.9	1.5	1.6	1.6																
STOP	0.9	1.5	1.6	1.6																
Ref No.	IC56104									IC56105							IC56107			
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5		1	2	3	4	5
REC	3.3	0	1.3	0	4.8	0	0	3.9		5.7	0	4.8	0	5.0		0	1.6	0	1.5	3.3
PLAY	3.3	0	1.3	0	4.8	0	0	3.9		5.7	0	4.8	0	5.0		0	1.6	0	1.5	3.3
STOP	3.3	0	1.3	0	4.8	0	0	3.9		5.7	0	4.8	0	5.0		0	1.6	0	1.5	3.3
Ref No.	Q56001				Q56002				Q56101				Q56102				Q56103			
MODE	E	C	B		E	C	B		E	C	B		1	2	3		1	2	3	
REC	0	4.9	0		0	0	0.6		0	3.7	0		3.3	5.0	3.3		3.3	5.0	3.3	
PLAY	0	4.9	0		0	0	0.6		0	3.7	0		3.3	5.0	3.3		3.3	5.0	3.3	
STOP	0	4.9	0		0	0	0.6		0	3.7	0		3.3	5.0	3.3		3.3	5.0	3.3	
Ref No.	QR56104				QR56105															
MODE	E	C	B		E	C	B													
REC	3.7	3.5	3.7		0	3.5	0													
PLAY	3.7	3.5	3.7		0	3.5	0													
STOP	3.7	3.5	3.7		0	3.5	0													

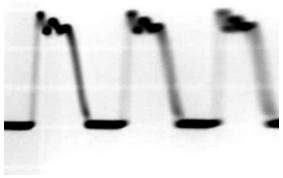
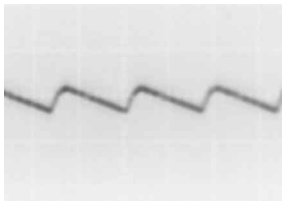
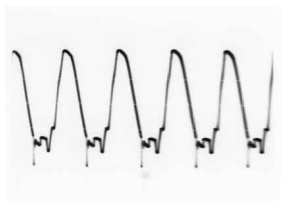
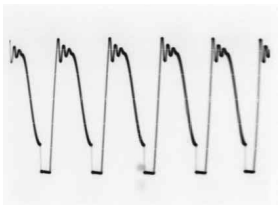
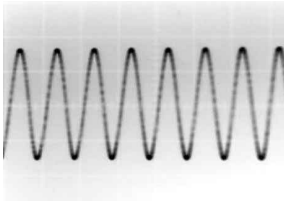
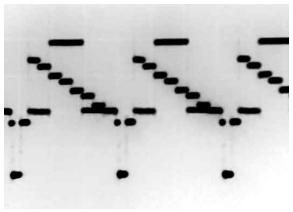
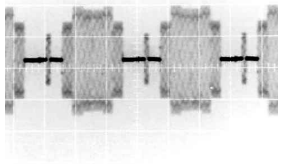
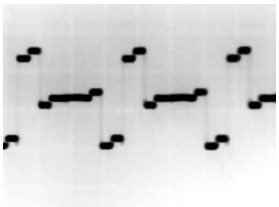
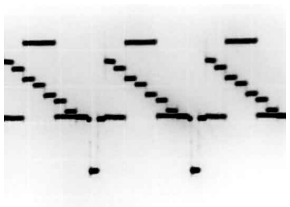
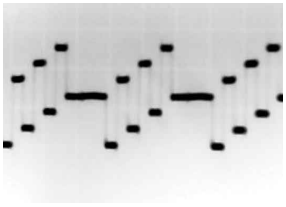
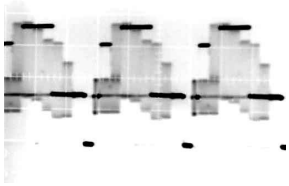
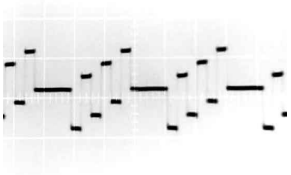
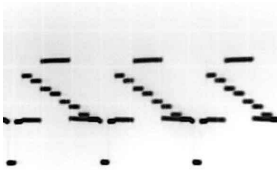
15.1.4. Tuner P.C.B.

Ref No.	Q7802																			
MODE	E	C	B																	
REC	3.8	1.2	3.1																	
PLAY	3.8	1.2	3.1																	
STOP	3.8	1.2	3.1																	

15.1.5. P59001 Connector

Ref No.	P59001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	0	0	0	0	0	0	0	0	0	0	0	0	3.3	12.3	4.9	12.3	3.3	0	4.9	0
PLAY	0	0	0	0	0	0	0	0	0	0	0	0	3.3	12.3	4.9	12.3	3.3	0	4.9	0
STOP	0	0	0	0	0	0	0	0	0	0	0	0	3.3	12.3	4.9	12.3	3.3	0	4.9	0
Ref No.	P59001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	3.3	5.1	3.3	5.1	5.0	3.3	2.3	3.1	2.5	4.9	2.5	3.3	0	3.3	0	3.3	0	3.3	2.5	-
PLAY	3.3	5.1	3.3	5.1	5.0	3.3	2.3	3.1	2.5	4.9	2.5	3.3	0	3.3	0	3.3	0	3.3	2.5	-
STOP	3.3	5.1	3.3	5.1	5.0	3.3	2.3	3.2	2.5	4.9	2.5	3.3	0	3.3	0	3.3	0	3.3	2.5	-
Ref No.	P59001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	2.5	3.2	0	1.7	0	0	0	3.3	0	3.3	1.1	-	0	0.3	1.5	3.3	0	-	1.0	4.8
PLAY	2.5	3.2	0	1.7	0	0	0	3.3	0	3.3	1.1	-	0	0.3	1.5	3.3	0	-	1.0	4.8
STOP	2.5	3.2	0	1.7	0	0	0	3.3	0	3.3	1.1	-	0	0.3	1.5	3.3	0	-	1.0	4.8
Ref No.	P59001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
REC	0	4.8	1.1	12.3	0	12.3	1.0	12.3	0	12.3	1.3	12.3	0	12.3	2.1	5.0	0	0	-	-
PLAY	0	4.8	1.1	12.3	0	12.3	1.0	12.3	0	12.3	1.3	12.3	0	12.3	2.1	5.0	0	0	-	-
STOP	0	4.8	1.1	12.3	0	12.3	1.0	12.3	0	12.3	1.3	12.3	0	12.3	2.1	5.0	0	0	-	-
Ref No.	P59001																			
MODE	81	82	83	84	85	86	87	88												
REC	0	0	0	0.3	0	0	0	0												
PLAY	0	0	0	0.3	0	0	0	0												
STOP	0	0	0	0.3	0	0	0	0												

15.1.6. Waveform Chart

 T1150-4,5 STOP 30Vp-p (5 μ sec.div)	 T1150-8 STOP 30Vp-p (5 μ sec.div)	 T1150-12 STOP 10Vp-p (2m sec.div)	 IC1150-1 STOP 10.0Vp-p (5 μ sec.div)
 IC1150-9 STOP 580Vp-p (5 μ sec.div)	 P7402-29,31 REC/PLAY 0.8Vp-p (1m sec.div)	 P7402-51 REC/PLAY 1.0Vp-p (20 μ sec.div)	 P7402-55 REC/PLAY 0.8Vp-p (20 μ sec.div)
 P7402-59 REC/PLAY 0.6Vp-p (20 μ sec.div)	 P7402-63 REC/PLAY 1.0Vp-p (20 μ sec.div)	 P7402-67 REC/PLAY 0.6Vp-p (20 μ sec.div)	 P7402-71 REC/PLAY 1.0Vp-p (20 μ sec.div)
 JK3903-2 REC/PLAY 1.0Vp-p (20 μ sec.div)	 JK3903-4 REC/PLAY 1.0Vp-p (20 μ sec.div)	 JK3903-6 REC/PLAY 2.0Vp-p (20 μ sec.div)	

15.1.7. Abbreviations

INITIAL/LOGO		ABBREVIATIONS
A	A0~UP	ADDRESS
	ACLK	AUDIO CLOCK
	AD0~UP	ADDRESS BUS
	ADATA	AUDIO PES PACKET DATA
	ALE	ADDRESS LATCH ENABLE
	AMUTE	AUDIO MUTE
	AREQ	AUDIO PES PACKET REQUEST
	ARF	AUDIO RF
	ASI	SERVO AMP INVERTED INPUT
	ASO	SERVO AMP OUTPUT
	ASYNC	AUDIO WORD DISTINCTION SYNC
B	BCK	BIT CLOCK (PCM)
	BCKIN	BIT CLOCK INPUT
	BDO	BLACK DROP OUT
	BLKCK	SUB CODE BLOCK CLOCK
	BOTTOM	CAP. FOR BOTTOM HOLD
	BYP	BYPATH
	BYTCK	BYTE CLOCK
C	CAV	CONSTANT ANGULAR VELOCITY
	CBDO	CAP. BLACK DROP OUT
	CD	COMPACT DISC
	CDSCK	CD SERIAL DATA CLOCK
	CDSRDATA	CD SERIAL DATA
	CDRF	CD RF (EFM) SIGNAL
	CDV	COMPACT DISC-VIDEO
	CHNDATA	CHANNEL DATA
	CKSL	SYSTEM CLOCK SELECT
	CLV	CONSTANT LINEAR VELOCITY
	COFTR	CAP. OFF TRACK
	CPA	CPU ADDRESS
	CPCS	CPU CHIP SELECT
	CPDT	CPU DATA
	CPUADR	CPU ADDRESS LATCH
	CPUADT	CPU ADDRESS DATA BUS
	CPUIRQ	CPU INTERRUPT REQUEST
	CPRD	CPU READ ENABLE
	CPWR	CPU WRITE ENABLE
	CS	CHIP SELECT
	CSYNCIN	COMPOSITE SYNC IN
	CSYNCOUT	COMPOSITE SYNC OUT
D	DACCK	D/A CONVERTER CLOCK
	DEEMP	DEEMPHASIS BIT ON/OFF
	DEMPH	DEEMPHASIS SWITCHING
	DIG0~UP	FL DIGIT OUTPUT
	DIN	DATA INPUT
	DMSRCK	DM SERIAL DATA READ CLOCK
	DMUTE	DIGITAL MUTE CONTROL
	DO	DROP OUT
	DOUT0~UP	DATA OUTPUT
	DRF	DATA SLICE RF (BIAS)
	DRPOUT	DROP OUT SIGNAL
	DREQ	DATA REQUEST
	DRESP	DATA RESPONSE
	DSC	DIGITAL SERVO CONTROLLER
	DSLF	DATA SLICE LOOP FILTER
	DVD	DIGITAL VIDEO DISC

INITIAL/LOGO		ABBREVIATIONS
E	EC	ERROR TORQUE CONTROL
	ECR	ERROR TORQUE CONTROL REFERENCE
	ENCSEL	ENCODER SELECT
	ETMCLK	EXTERNAL M CLOCK (81MHz/40.5MHz)
	ETSCLK	EXTERNAL S CLOCK (54MHz)
F	FBAL	FOCUS BALANCE
	FCLK	FRAME CLOCK
	FE	FOCUS ERROR
	FFI	FOCUS ERROR AMP INVERTED INPUT
	FEO	FOCUS ERROR AMP OUTPUT
	FG	FREQUENCY GENERATOR
	FSC	FREQUENCY SUB CARRIER
	FSCK	FS (384 OVER SAMPLING) CLOCK
G	GND	COMMON GROUNDING (EARTH)
H	HA0~UP	HOST ADDRESS
	HD0~UP	HOST DATA
	HINT	HOST INTERRUPT
	HRXW	HOST READ/WRITE

INITIAL/LOGO		ABBREVIATIONS
I	IECOUT	IEC958 FORMAT DATA OUTPUT
	IPFRAG	INTERPOLATION FLAG
	IREF	I (CURRENT) REFERENCE
	ISEL	INTERFACE MODE SELECT
L	LDON	LASER DIODE CONTROL
	LPC	LASER POWER CONTROL
	LRCK	L CH/R CH DISTINCTION CLOCK
M	MA0~UP	MEMORY ADDRESS
	MCK	MEMORY CLOCK
	MCKI	MEMORY CLOCK INPUT
	MCLK	MEMORY SERIAL COMMAND CLOCK
	MDATA	MEMORY SERIAL COMMAND DATA
	MDQ0~UP	MEMORY DATA INPUT/OUTPUT
	MDQM	MEMORY DATA I/O MASK
	MLD	MEMORY SERIAL COMMAND LOAD
	MPEG	MOVING PICTURE EXPERTS GROUP
O	ODC	OPTICAL DISC CONTROLLER
	OFTR	OFF TRACKING
	OSCI	OSCILLATOR INPUT
	OSCO	OSCILLATOR OUTPUT
	OSD	ON SCREEN DISPLAY
P	P1~UP	PORT
	PCD	CD TRACKING PHASE DIFFERENCE
	PCK	PLL CLOCK
	PDVD	DVD TRACKING PHASE DIFFERENCE
	PEAK	CAP. FOR PEAK HOLD
	PLLCLK	CHANNEL PLL CLOCK
	PLLOK	PLL LOCK
	PWMCTL	PWM OUTPUT CONTROL
	PWMDA	PULSE WAVE MOTOR DRIVE A
	PWMOA, B	PULSE WAVE MOTOR OUT A, B

INITIAL/LOGO		ABBREVIATIONS
R	RE	READ ENABLE
	RFENV	RF ENVELOPE
	RFO	RF PHASE DIFFERENCE OUTPUT
	RS	(CD-ROM) REGISTER SELECT
	RSEL	RF POLARITY SELECT
	RST	RESET
	RSV	RESERVE
S	SBI0, 1	SERIAL DATA INPUT
	SBO0	SERIAL DATA OUTPUT
	SBT0, 1	SERIAL CLOCK
	SCK	SERIAL DATA CLOCK
	SCKR	AUDIO SERIAL CLOCK RECEIVER
	SCL	SERIAL CLOCK
	SCLK	SERIAL CLOCK
	SDA	SERIAL DATA
	SEG0~UP	FL SEGMENT OUTPUT
	SELCLK	SELECT CLOCK
	SEN	SERIAL PORT ENABLE
	SIN1, 2	SERIAL DATA IN
	SOUT1, 2	SERIAL DATA OUT
	SPDI	SERIAL PORT DATA INPUT
	SPDO	SERIAL PORT DATA OUTPUT
	SPEN	SERIAL PORT R/W ENABLE
	SPRCLK	SERIAL PORT READ CLOCK
	SPWCLK	SERIAL PORT WRITE CLOCK
	SQCK	SUB CODE Q CLOCK
	SQCX	SUB CODE Q DATA READ CLOCK
	SRDATA	SERIAL DATA
	SRMADR	SRAM ADDRESS BUS
	SRMDT0~7	SRAM DATA BUS 0~7
	SS	START/STOP
	STAT	STATUS
	STCLK	STREAM DATA CLOCK
	STD0~UP	STREAM DATA
	STENABLE	STREAM DATA INPUT ENABLE
	STSEL	STREAM DATA POLARITY SELECT
	STVALID	STREAM DATA VALIDITY
	SUBC	SUB CODE SERIAL
	SBCK	SUB CODE CLOCK
	SUBQ	SUB CODE Q DATA
	SYSCLK	SYSTEM CLOCK

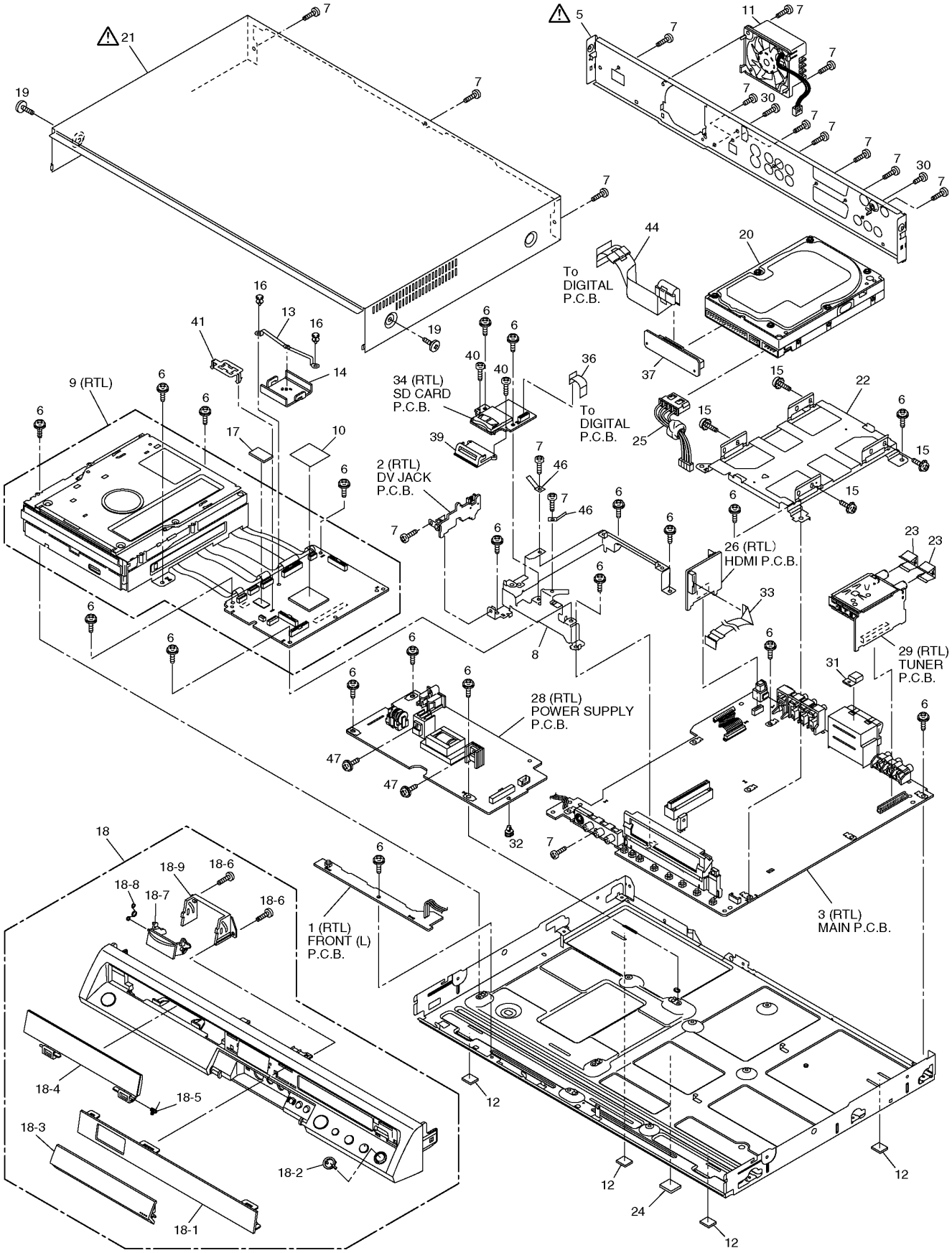
INITIAL/LOGO		ABBREVIATIONS
T	TE	TRACKING ERROR
	TIBAL	BALANCE CONTROL
	TID	BALANCE OUTPUT 1
	TIN	BALANCE INPUT
	TIP	BALANCE INPUT
	TIS	BALANCE OUTPUT 2
	TPSN	OP AMP INPUT
	TPSO	OP AMP OUTPUT
	TPSP	OP AMP INVERTED INPUT
	TRCRS	TRACK CROSS SIGNAL
	TRON	TRACKING ON
	TRSON	TRAVERSE SERVO ON

INITIAL/LOGO		ABBREVIATIONS
V	VBLANK	V BLANKING
	VCC	COLLECTOR POWER SUPPLY VOLTAGE
	VCDCONT	VIDEO CD CONTROL (TRACKING BALANCE)
	VDD	DRAIN POWER SUPPLY VOLTAGE
	VFB	VIDEO FEED BACK
	VREF	VOLTAGE REFERENCE
	VSS	SOURCE POWER SUPPLY VOLTAGE
W	WAIT	BUS CYCLE WAIT
	WDCK	WORD CLOCK
	WEH	WRITE ENABLE HIGH
	WSR	WORD SELECT RECEIVER
X	X	X´ TAL
	XALE	X ADDRESS LATCH ENABLE
	XAREQ	X AUDIO DATA REQUEST
	XCDROM	X CD ROM CHIP SELECT
	XCS	X CHIP SELECT
	XCSYNC	X COMPOSITE SYNC
	XDS	X DATA STROBE
	XHSYNCO	X HORIZONTAL SYNC OUTPUT
	XHINT	XH INTERRUPT REQUEST
	XI	X´ TAL OSCILLATOR INPUT
	XINT	X INTERRUPT
	XMW	X MEMORY WRITE ENABLE
	XO	X´ TAL OSCILLATOR OUTPUT
	XRE	X READ ENABLE
	XSRMCE	X SRAM CHIP ENABLE
	XSRMOE	X SRAM OUTPUT ENABLE
	XSRMWE	X SRAM WRITE ENABLE
	XVCS	X V-DEC CHIP SELECT
	XVDS	X V-DEC CONTROL BUS STROBE
	XVSYNCO	X VERTICAL SYNC OUTPUT

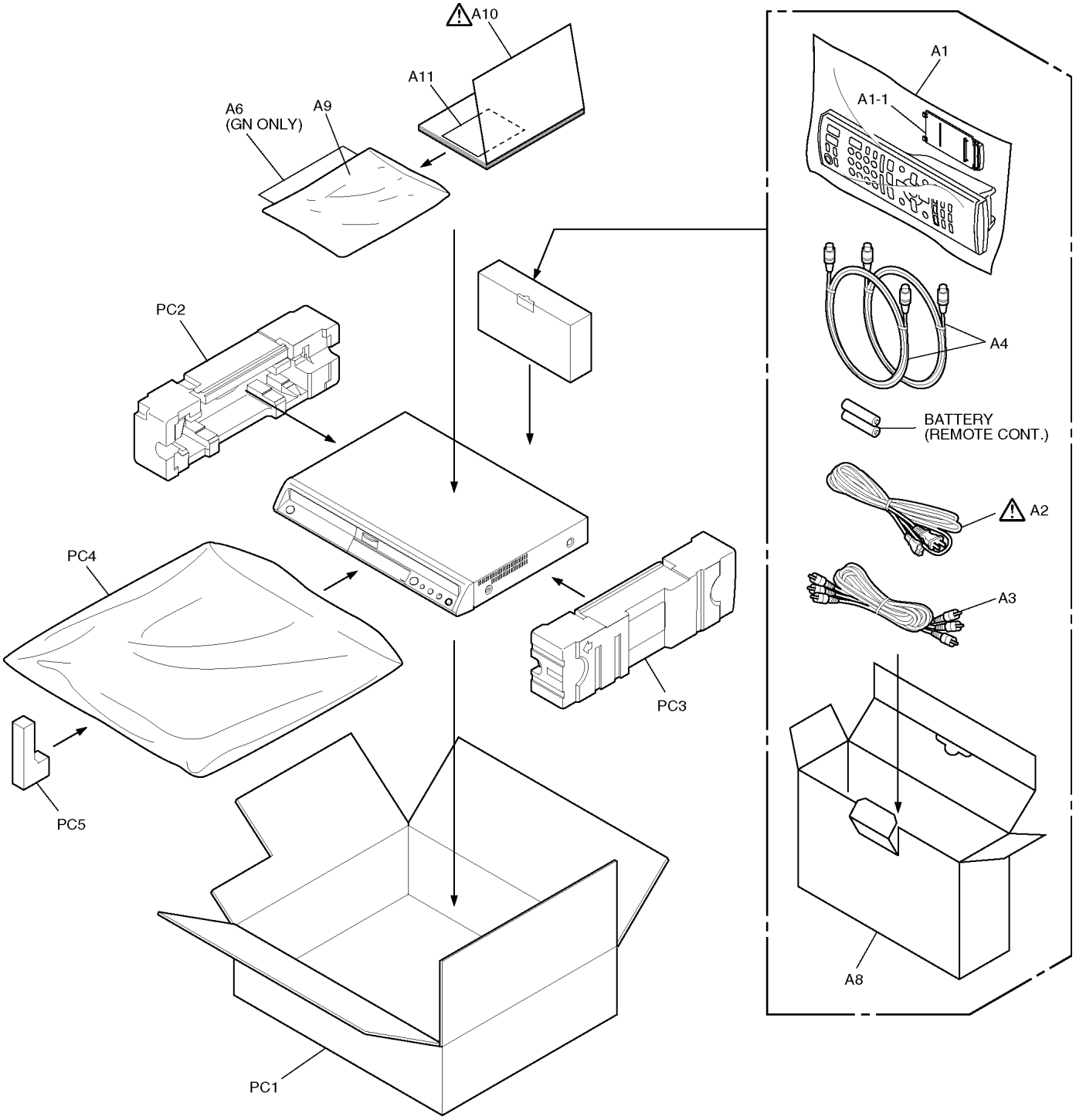
16 Parts and Exploded Views

16.1. Exploded Views

16.1.1. Casing Parts & Mechanism Section



16.1.2. Packing & Accessories Section



16.2. Replacement Parts List

Notes:

*Important safety notice:

Components identified by ⚠ mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufactures specified parts shown in the parts list.

*Warning: This product uses a laser diode. Refer to caution statements.

*Capacity values are in microfarads (μF) unless specified otherwise, P=Pico-farads (pF), F=Farads (F).

*Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM).

*The marking (RTL) indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.

*"(IA)-(IE)", marks in Remarks indicate languages of instruction manuals. [(IA): English, (IB): Chinese, (IC): Arabic, (ID): Russian, (IE): Ukrainian]

*Parts indicated with PAVC-CSG in the Remarks column are supplied by PAVC-CSG.

*All parts except parts indicated with (PAVC-CSG) in the Remarks column are supplied by PAVCSG.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
■	RFKB79119MT	MAIN P.C.B.		(RTL)EE
■	RFKB79119NT	MAIN P.C.B.		(RTL)GC,GCS,GN
C1503	F2A1A6810022	10V 680P	1	
C1504	F2A1E1010067	25V 100U	1	
C1508	F1H1A105A028	10V 1U	1	
C1509	ECJ1VB1H103K	50V 0.01U	1	
C1510	F1H1A105A028	10V 1U	1	
C1511	F1H1A105A028	10V 1U	1	
C1512	F1H1A105A028	10V 1U	1	
C1515	F2A1E4700048	25V 47U	1	
C1516	F2A1H1510006	50V 150P	1	
C1518	F2A0J6810007	6.3V 680P	1	
C1519	F1H1A105A028	10V 1U	1	
C1520	F1H1A105A028	10V 1U	1	
C1521	F2A1C121A453	16V 120P	1	
C1522	F1H1A105A028	10V 1U	1	
C1523	F2A1A470A388	10V 47U	1	
C1524	F2A1A101A389	10V 100U	1	
C1525	ECJ1VB1C104K	16V 0.1U	1	
C1526	F1H1A105A028	10V 1U	1	
C1527	F1H1A105A028	10V 1U	1	
C1528	F1K1C105A026	16V 1U	1	
C1529	F2A1A470A388	10V 47U	1	
C1535	F1H1A105A028	10V 1U	1	
C1536	F1J0J106A014	6.3V 10U	1	
C1538	F1H1A105A028	10V 1U	1	
C1539	F1H1A105A028	10V 1U	1	
C1540	ECJ1VB1H103K	50V 0.01U	1	
C1541	F2A1E1010067	25V 100U	1	
C1548	F2A1C121A453	16V 120P	1	
C1549	F2A1C121A453	16V 120P	1	
C3001	ECJ1VB1C104K	16V 0.1U	1	
C3002	ECJ1VB1H103K	50V 0.01U	1	
C3003	ECJ1VB1C104K	16V 0.1U	1	
C3004	ECJ1VB1C104K	16V 0.1U	1	
C3005	ECA0JM471B	6.3V 470U	1	
C3006	ECA0JM471B	6.3V 470U	1	
C3007	F2A1A4710038	10V 470U	1	
C3008	F2A1A1010072	10V 100U	1	
C3009	F2A1A4710038	10V 470U	1	
C3010	F2A1A1010072	10V 100U	1	
C3011	ECJ1VB1C104K	16V 0.1U	1	
C3012	F2A1A4710038	10V 470U	1	
C3013	F2A1A1010072	10V 100U	1	
C3014	ECJ1VB1C104K	16V 0.1U	1	
C3015	ECJ1VB1C104K	16V 0.1U	1	
C3016	ECJ1VB1C104K	16V 0.1U	1	
C3017	ECJ1VB1C104K	16V 0.1U	1	
C3018	ECJ1VB1C104K	16V 0.1U	1	
C3019	ECJ1VB1C104K	16V 0.1U	1	
C3020	ECJ1VB1C104K	16V 0.1U	1	
C3021	ECJ1VB1C104K	16V 0.1U	1	
C3022	ECJ1VB1C104K	16V 0.1U	1	
C3024	ECJ1VB0J105K	6.3V 1U	1	
C3025	ECJ1VB1C104K	16V 0.1U	1	
C3026	ECJ1VB0J105K	6.3V 1U	1	
C3027	ECJ1VB1C104K	16V 0.1U	1	
C3028	ECJ1VB0J105K	6.3V 1U	1	
C3029	ECJ1VB1C104K	16V 0.1U	1	
C3031	ECJ1VB1H103K	50V 0.01U	1	
C3032	ECEA0JKA101B	6.3V 100U	1	
C3033	ECJ1VB1H103K	50V 0.01U	1	
C3034	ECJ1VB1H103K	50V 0.01U	1	
C3035	ECEA0JKA101B	6.3V 100U	1	
C3038	ECJ1VB1C104K	16V 0.1U	1	
C3039	ECJ1VB1C104K	16V 0.1U	1	
C3041	ECJ1VC1H330J	50V 33P	1	
C3057	ECJ1VB1H102K	50V 1000P	1	
C3058	ECJ1VC1H471J	50V 470P	1	
C3059	ECJ1VB1H102K	50V 1000P	1	
C3060	ECJ1VC1H471J	50V 470P	1	
C3064	ECJ1VB1C104K	16V 0.1U	1	
C3070	ECJ1VB1H102K	50V 1000P	1	
C3071	ECJ1VB1H102K	50V 1000P	1	
C3072	ECJ1VB1C104K	16V 0.1U	1	
C3910	F2A1V100A534	35V 10U	1	
C3911	F2A1V100A534	35V 10U	1	
C3914	F2A1H100A236	50V 10U	1	
C3915	F2A1H100A236	50V 10U	1	
C3916	F2A1H1R0A236	50V 1U	1	
C3917	F2A1H1R0A236	50V 1U	1	
C3918	F2A1H100A236	50V 10U	1	
C3919	F2A1H100A236	50V 10U	1	
C3928	F2A1H1R0A638	50V 1U	1	
C3929	F2A1H1R0A638	50V 1U	1	
C3935	F2A1E2210050	25V 220U	1	
C3953	ECJ1VC1H471J	50V 470P	1	
C3954	ECJ1VC1H471J	50V 470P	1	
C3955	ECJ1VC1H221J	50V 220P	1	
C3956	ECJ1VC1H221J	50V 220P	1	
C3957	ECJ1VC1H471J	50V 470P	1	
C3958	ECJ1VC1H471J	50V 470P	1	
C3961	ECJ1VC1H221J	50V 220P	1	
C3962	ECJ1VC1H221J	50V 220P	1	
C4003	ECJ1VB0J105K	6.3V 1U	1	
C4005	F2A1V100A534	35V 10U	1	
C4006	F2A1V100A534	35V 10U	1	
C4008	F2A1E1010067	25V 100U	1	
C4019	F2A1C100A796	16V 10P	1	
C4021	F2A1C100A796	16V 10P	1	
C4023	F2A1H1R0A638	50V 1U	1	
C4024	F2A1E1010067	25V 100U	1	
C4025	F2A1H1R0A638	50V 1U	1	
C4027	F2A1V100A534	35V 10U	1	
C4028	F2A1V100A534	35V 10U	1	
C4033	F2A1C220B173	16V 22P	1	
C4034	F2A1C220B173	16V 22P	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C4055	ECJ1VF1C104Z	16V 0.1U	1	
C4056	F2A1C471A628	16V 470U	1	
C4057	F1J1H330A688	50V 33U	1	
C4059	ECQV1H104JL3	50V 0.1U	1	
C4060	F1J1H330A688	50V 33U	1	
C4061	ECJ1VF1C104Z	16V 0.1U	1	
C4062	F2A1C221A637	16V 220U	1	
C4063	F2A1C220B173	16V 22P	1	
C4064	F2A1C220B173	16V 22P	1	
C4065	ECJ1VF1C104Z	16V 0.1U	1	
C4067	F2A1E2210050	25V 220U	1	
C4070	F2A1C221A637	16V 220U	1	
C4072	F2A1C221A637	16V 220U	1	
C4082	ECJ2VC1H561J	50V 560P	1	
C4083	ECJ2VC1H561J	50V 560P	1	
C4092	F2A1C471A628	16V 470U	1	
C4901	F2A0J470A599	6.3V 47U	1	
C4902	ECJ1VF1C104Z	16V 0.1U	1	
C4903	F2A1E4700048	25V 47U	1	
C4904	ECJ1VF1C104Z	16V 0.1U	1	
C4907	ECHR1H223JZ3	50V 0.022U	1	
C7301	ECJ1VB1C104K	16V 0.1U	1	
C7303	ECA1CAK101XB	16V 100U	1	
C7305	ECA1CAK101XB	16V 100U	1	
C7306	ECJ1VB1H103K	50V 0.01U	1	
C7307	ECJ1VC1H100D	50V 10P	1	
C7308	ECJ1VC1H100D	50V 10P	1	
C7309	ECJ1VC1H101J	50V 100P	1	
C7310	ECJ1VC1H101J	50V 100P	1	
C7312	F2A1V100A384	35V 10U	1	
C7313	F2A1V100A384	35V 10U	1	
C7314	ECJ1VF1C104Z	16V 0.1U	1	
C7317	ECA1CAK470XB	16V 47U	1	
C7323	ECJ1VB1H102K	50V 1000P	1	
C7324	ECJ1VF1C104Z	16V 0.1U	1	
C7329	ERJ3GEY0R00V	1/10W 0	1	
C7330	ERJ3GEYJ822V	1/10W 8.2K	1	
C7332	ECJ1VF1C104Z	16V 0.1U	1	
C7333	ECJ1VB1C104K	16V 0.1U	1	
C7334	ECA1HAK2R2XB	50V 2.2U	1	
C7335	ECJ1VF1C104Z	16V 0.1U	1	
C7340	ECJ1VB1C104K	16V 0.1U	1	
C7401	F2A1C471A628	16V 470U	1	
C7402	ECJ1VB1H103K	50V 0.01U	1	
C7403	ECHR1H223JZ3	50V 0.022U	1	
C7404	F1H1A105A028	10V 1U	1	
C7405	F2A1C470A689	16V 47	1	
C7406	F1H1A105A028	10V 1U	1	
C7407	ECJ1VB1C104K	16V 0.1U	1	
C7412	F1H1A105A028	10V 1U	1	
C7413	F1H1A105A028	10V 1U	1	
C7414	F1H1A105A028	10V 1U	1	
C7415	F1K1C105A026	16V 1U	1	
C7417	ECJ1VB1C104K	16V 0.1U	1	
C7418	F2A0J221A458	6.3V 220U	1	
C7419	ECJ1VB0J105K	6.3V 1U	1	
C7439	ECJ1VB1C104K	16V 0.1U	1	
C7501	F1J0J475A008	6.3V 4.7U	1	
C7502	ECJ1VC1H101J	50V 100P	1	
C7503	F1J0J475A008	6.3V 4.7U	1	
C7504	ECJ1VB1C104K	16V 0.1U	1	
C7505	ECJ1VB1C104K	16V 0.1U	1	
C7507	ECJ1VB1C104K	16V 0.1U	1	
C7509	ECJ1VB1C104K	16V 0.1U	1	
C7510	ECJ1VB1C104K	16V 0.1U	1	
C7511	ECJ1VC1H101J	50V 100P	1	
C7512	ECJ1VB1C104K	16V 0.1U	1	
C7513	F2A1V390A386	35V 39U	1	
C7514	ECJ1VB1H103K	50V 0.01U	1	
C7516	ECJ1VC1H180J	50V 18P	1	
C7517	ECJ1VC1H180J	50V 18P	1	
C7518	F1H1H220A799	50V 22P	1	
C7519	ECJ1VC1H180J	50V 18P	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C7520	ECJ1VB1C104K	16V 0.1U	1	
C7522	ECJ1VC1H101J	50V 100P	1	
C7523	ECJ1VB1H103K	50V 0.01U	1	
C7524	ECJ1VB1C104K	16V 0.1U	1	
C7528	ECJ1VB1C104K	16V 0.1U	1	
C7531	ECJ1VC1H100D	50V 10P	1	
C7532	ECJ1VC1H100D	50V 10P	1	
C7534	ECJ1VB1H103K	50V 0.01U	1	
C7541	F1H1H470A799	50V 47P	1	
C7542	ECJ1VB1C104K	16V 0.1U	1	
C7543	F1H1H470A799	50V 47P	1	
C7544	ECJ1VB1C104K	16V 0.1U	1	
C7546	ECJ1VB0J105K	6.3V 1U	1	
C7547	ECJ1VB0J105K	6.3V 1U	1	
C7551	ECJ1VB1C104K	16V 0.1U	1	
C7552	ECJ1VC1H221J	50V 220P	1	
C7553	ECJ1VC1H221J	50V 220P	1	
C7554	ECJ1VB1H103K	50V 0.01U	1	
C7555	ECJ1VB1H103K	50V 0.01U	1	
C7556	ECJ1VB1H103K	50V 0.01U	1	
C7557	ECJ1VB1H103K	50V 0.01U	1	
C7558	ECJ1VB1H103K	50V 0.01U	1	
C7565	F2A1C121A453	16V 120P	1	
C7569	ECQB1H392KF3	50V 3900P	1	
C7570	F2A1V560A387	35V 56U	1	
C7571	F2A1H100A454	50V 10U	1	
C7572	F2A1C121A453	16V 120P	1	
C7573	F2A1H100A454	50V 10U	1	
C7577	ECJ1VB1C104K	16V 0.1U	1	
C7578	F2A0J470A012	6.3V 47U	1	
C7579	F2A0J470A012	6.3V 47U	1	
C7584	F4D55473A013	5.5V 0.047U	1	
C7587	ECJ1VB0J105K	6.3V 1U	1	
C7588	ECJ1VB1H103K	50V 0.01U	1	
C7590	ECJ1VB1C104K	16V 0.1U	1	
C7592	F2A0J470A245	6.3V 47U	1	
C7593	F2A1C121A453	16V 120P	1	
D3901	MA2C165001VT	DIODE	1	
D4001	MA2C165001VT	DIODE	1	
D4005	MA3Z142D0LG	DIODE	1	
D4006	MA3Z142D0LG	DIODE	1	
D7403	MA2C165001VT	DIODE	1	
D7501	B0BA03600021	DIODE	1	
D7502	B0ACCK000005	DIODE	1	
D7504	MAZ4220NLF	DIODE	1	
D7505	B0AADM000003	DIODE	1	
D7506	B0AADM000003	DIODE	1	
D7507	B0JAMD000026	DIODE	1	
D7508	MAZ4180NHF	DIODE	1	
D7509	B0JDCE000002	DIODE	1	
D7510	MA2C165001VT	DIODE	1	
DP7501	A2BD00000145	DISPLAY TUBE	1	
IC1505	C0CBCBC00174	IC	1	
IC1506	C0DAEYH00002	IC	1	
IC1507	C0CBCDD00027	IC	1	
IC1510	C0CBCDG00006	IC	1	
IC1520	C0CBCDC00052	IC	1	
IC1521	C0CBCBD00048	IC	1	
IC1522	C0EBJ0000143	IC	1	
IC3001	C1AB00002379	IC	1	
IC4009	C0ABBB000216	IC	1	
IC4011	C0DBAHD00013	IC	1	
IC4012	C0ABBB000230	IC	1	
IC4901	B3ZAZ0000017	IC	1	
IC7301	C1AB00002225	IC	1	
IC7302	C0EAH0000051	IC	1	
IC7401	C0CBCYG00004	IC	1	
IC7402	C0CBCDC00052	IC	1	
IC7403	C0CBCDD00025	IC	1	
IC7404	RFKFM6016KT	IC	1	(PAVC-CSG)

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
IC7501	C2CBJG000728	IC	1	
IC7502	C0EBE0000504	IC	1	
IC7504	C0HBB0000044	IC	1	
IC7505	C0EBJ0000336	IC	1	
IC7507	C0ABBA000073	IC	1	
IP1501	K5H302100004	IC PROTECTOR	1	
IP7501	K5H7512A0010	IC PROTECTOR	1	
IR7501	PNA4618M09VT	REMOTE SENSOR	1	
JK3001	K1U822B00003	JACK,OUT,AV4 IN	1	
JK3002	K2HE1YYB0002	JACK,AV3	1	
JK3901	K1FB242B0005	JACK,AV1,AV2	1	
JK3903	K2HA306B0085	JACK,COMPONENT VIDEO OUT	1	
JW7501	VWJ02F0060VV	MAIN/FRONT CABLE UNIT	1	
K7303	ERJ3GEY0R00V	1/10W 0	1	
K7308	ERJ3GEY0R00V	1/10W 0	1	
K7503	ERJ3GEY0R00V	1/10W 0	1	
K7504	ERJ3GEY0R00V	1/10W 0	1	
L1505	G0A100HA0023	COIL 10UH	1	
L4901	G0C220KA0065	COIL 22UH	1	
L7303	G0C1R0JA0019	COIL 1UH	1	
L7304	G0C2R2JA0019	COIL 2.2UH	1	
L7401	G0A220GA0026	COIL 22UH	1	
L7402	G0A220GA0026	COIL 22UH	1	
L7501	G0C390JA0055	COIL 39UH	1	
L7502	G0C220JA0019	COIL 22UH	1	
LB1502	J0JKB0000003	COIL	1	
LB1503	J0JKB0000003	COIL	1	
LB1504	J0JKB0000003	COIL	1	
LB1506	J0JKB0000003	COIL	1	
LB3001	J0JGC0000020	COIL	1	
LB3002	J0JGC0000020	COIL	1	
LB3003	J0JGC0000020	COIL	1	
LB3005	J0JBC0000011	COIL	1	
LB3006	J0JBC0000019	COIL	1	
LB3007	J0JBC0000011	COIL	1	
LB3008	J0JBC0000019	COIL	1	
LB3009	ERJ3GEY0R00V	1/10W 0	1	
LB3010	ERJ3GEY0R00V	1/10W 0	1	
LB3011	ERJ3GEY0R00V	1/10W 0	1	
LB3012	J0JBC0000011	COIL	1	
LB3013	J0JBC0000011	COIL	1	
LB3907	J0JBC0000011	COIL	1	
LB3908	J0JBC0000011	COIL	1	
LB3911	J0JGC0000020	COIL	1	
LB3912	J0JBC0000011	COIL	1	
LB3913	J0JBC0000011	COIL	1	
LB7301	J0JCC0000124	COIL	1	
LB7302	J0JCC0000124	COIL	1	
LB7303	J0JCC0000080	COIL	1	
LB7304	J0JHC0000032	COIL	1	
LB7401	J0JGC0000020	COIL	1	
LB7402	J0JKB0000012	COIL	1	
LB7403	J0JKB0000012	COIL	1	
LB7404	J0JKB0000012	COIL	1	
LB7405	J0JKB0000012	COIL	1	
LB7406	J0JCC0000164	COIL	1	
LB7407	J0JKB0000012	COIL	1	
LB7408	J0JCC0000164	COIL	1	
LB7409	J0JKB0000012	COIL	1	
LB7410	J0JCC0000103	COIL	1	
LB7411	J0JCC0000164	COIL	1	
LB7412	J0JCC0000164	COIL	1	
LB7413	J0JCC0000164	COIL	1	
LB7414	J0JCC0000164	COIL	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
LB7415	J0JCC0000103	COIL	1	
LB7416	J0JCC0000164	COIL	1	
LB7417	J0JCC0000103	COIL	1	
LB7418	J0JCC0000103	COIL	1	
LB7419	J0JCC0000103	COIL	1	
LB7420	J0JCC0000164	COIL	1	
LB7501	ERJ3GEY0R00V	1/10W 0	1	
LB7502	ERJ3GEY0R00V	1/10W 0	1	
LB7507	ERJ3GEY0R00V	1/10W 0	1	
LB7508	ERJ3GEY0R00V	1/10W 0	1	
LB7509	J0JCC0000060	COIL	1	
LB7510	ERJ3GEY0R00V	1/10W 0	1	
LB7515	ERJ3GEY0R00V	1/10W 0	1	
LB7516	ERJ3GEY0R00V	1/10W 0	1	
LB7517	ERJ3GEY0R00V	1/10W 0	1	
P1501	K1KA23A00003	CONNECTOR(23P)	1	
P1503	K1KA04AA0301	CONNECTOR(4P)	1	
P7402	K1KA88A00002	CONNECTOR(88P)	1	
P7505	K1KY10AA0107	CONNECTOR(10P)	1	
PP7401	K1KA18AA0288	CONNECTOR(18P)	1	
Q1501	B1DHED000008	TRANSISTOR	1	
Q1509	B1DHED000008	TRANSISTOR	1	
Q4006	2SD132800L	TRANSISTOR	1	
Q4007	2SD132800L	TRANSISTOR	1	
Q4008	2SD132800L	TRANSISTOR	1	
Q4009	2SD132800L	TRANSISTOR	1	
Q7401	2SD1819ARL	TRANSISTOR	1	
Q7402	2SD1819A0L	TRANSISTOR	1	
Q7501	2SB1218A0L	TRANSISTOR	1	
Q7502	2SD1819A0L	TRANSISTOR	1	
Q7503	2SB1218A0L	TRANSISTOR	1	
Q7504	2SD1819A0L	TRANSISTOR	1	
Q7505	2SD0601A0L	TRANSISTOR	1	
Q7506	2SD0601A0L	TRANSISTOR	1	
Q7507	2SD0601A0L	TRANSISTOR	1	
Q7508	2SD1819A0L	TRANSISTOR	1	
Q7509	2SD0601A0L	TRANSISTOR	1	
Q7510	B1BABK000001	TRANSISTOR	1	
Q7511	B1ABMD000004	TRANSISTOR	1	
QR1501	UNR521300L	TRANSISTOR	1	
QR1503	UNR521300L	TRANSISTOR	1	
QR4002	UNR511100L	TRANSISTOR	1	
QR4003	UNR521100L	TRANSISTOR	1	
QR4004	UNR521100L	TRANSISTOR	1	
QR7401	UNR521300L	TRANSISTOR	1	
QR7402	UNR511200L	TRANSISTOR	1	
QR7403	UNR521500L	TRANSISTOR	1	
QR7404	UNR521500L	TRANSISTOR	1	
QR7507	UNR521000L	TRANSISTOR	1	
QR7508	UNR521400L	TRANSISTOR	1	
R1502	ERJ3GEYJ103V	1/10W 10K	1	
R1505	ERJ3GEYJ823V	1/10W 82K	1	
R1506	ERJ3GEYJ222V	1/10W 2.2K	1	
R1507	ERJ3GEYJ822V	1/10W 8.2K	1	
R1509	ERJ3RBD393V	1/16W 39K	1	
R1510	ERJ3RBD113V	1/16W 11K	1	
R1511	ERJ3RBD152V	1/16W 1.5K	1	
R1518	ERJ3GEYJ223V	1/10W 22K	1	
R1519	ERJ3GEYJ223V	1/10W 22K	1	
R3001	ERJ3GEYJ102V	1/10W 1K	1	
R3003	ERJ3GEYJ102V	1/10W 1K	1	
R3004	ERJ3GEYJ102V	1/10W 1K	1	
R3006	ERJ3GEY0R00V	1/10W 0	1	
R3007	ERJ3GEYJ330V	1/10W 33	1	
R3008	ERJ3GEYJ102V	1/10W 1K	1	
R3009	ERJ3GEYJ104V	1/10W 100K	1	
R3054	ERJ3GEYJ750V	1/10W 75	1	
R3055	ERJ3GEYJ750V	1/10W 75	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R3056	ERJ3GEYJ750V	1/10W 75	1	
R3057	ERJ3GEYJ750V	1/10W 75	1	
R3058	ERJ3GEYJ750V	1/10W 75	1	
R3059	ERJ3GEYJ750V	1/10W 75	1	
R3060	ERJ3GEYJ750V	1/10W 75	1	
R3061	ERJ3GEYJ750V	1/10W 75	1	
R3062	ERJ3GEYJ750V	1/10W 75	1	
R3901	ERJ3GEYF750V	1/10W 75	1	
R3902	ERJ3GEYF750V	1/10W 75	1	
R3903	ERJ3GEYF750V	1/10W 75	1	
R3912	ERJ3GEYJ103V	1/10W 10K	1	
R3913	ERJ3GEYJ103V	1/10W 10K	1	
R3914	ERJ3GEYJ471V	1/10W 470	1	
R3918	ERJ3GEYJ471V	1/10W 470	1	
R3919	ERJ3GEYF750V	1/10W 75	1	
R3920	ERJ3GEYF750V	1/10W 75	1	
R3921	ERJ3GEYF750V	1/10W 75	1	
R3922	ERJ3GEYJ471V	1/10W 470	1	
R3923	ERJ3GEYJ471V	1/10W 470	1	
R3924	ERDS2TJ221T	1/4W 220	1	
R3925	ERJ3GEYF750V	1/10W 75	1	
R3926	ERJ3GEYF750V	1/10W 75	1	
R3927	ERJ3GEYF750V	1/10W 75	1	
R3928	ERJ3GEYJ750V	1/10W 75	1	
R3929	ERJ3GEYJ750V	1/10W 75	1	
R3930	ERJ3GEYJ750V	1/10W 75	1	
R3932	ERJ3GEYJ750V	1/10W 75	1	
R3934	ERJ3GEYJ750V	1/10W 75	1	
R3935	ERJ3GEYJ750V	1/10W 75	1	
R3975	ERJ3GEYJ101V	1/10W 100	1	
R3976	ERJ3GEYJ101V	1/10W 100	1	
R3983	ERJ3GEYJ103V	1/10W 10K	1	
R3984	ERJ3GEYJ103V	1/10W 10K	1	
R3987	ERJ3GEYJ473V	1/10W 47K	1	
R3988	ERJ3GEYJ102V	1/10W 1K	1	
R3989	ERJ3GEYJ102V	1/10W 1K	1	
R3990	ERJ3GEYJ473V	1/10W 47K	1	
R3991	ERJ3GEYJ473V	1/10W 47K	1	
R3992	ERJ3GEYJ102V	1/10W 1K	1	
R3993	ERJ3GEYJ102V	1/10W 1K	1	
R3994	ERJ3GEYJ473V	1/10W 47K	1	
R4003	ERJ3GEYJ821V	1/10W 820	1	
R4004	ERJ3GEYJ103V	1/10W 10K	1	
R4005	ERJ3GEYJ821V	1/10W 820	1	
R4006	ERJ3GEYJ823V	1/10W 82K	1	
R4007	ERJ3GEYJ823V	1/10W 82K	1	
R4008	ERJ3GEYJ823V	1/10W 82K	1	
R4010	ERJ3GEYJ473V	1/10W 47K	1	
R4011	ERJ3GEYJ473V	1/10W 47K	1	
R4013	ERJ3GEYJ823V	1/10W 82K	1	
R4046	D0HB682ZA002	1/16W 6.8K	1	
R4047	D0HB682ZA002	1/16W 6.8K	1	
R4055	D0HB123ZA002	1/16W 12K	1	
R4057	D0HB123ZA002	1/16W 12K	1	
R4066	D0HB103ZA002	1/10W 10K	1	
R4067	D0HB103ZA002	1/10W 10K	1	
R4071	ERJ3GEYJ473V	1/10W 47K	1	
R4074	ERJ3GEYJ473V	1/10W 47K	1	
R4076	ERJ3GEYJ821V	1/10W 820	1	
R4077	ERJ3GEYJ101V	1/10W 100	1	
R4078	ERJ3GEYJ272V	1/10W 2.7K	1	
R4079	ERJ3GEYJ272V	1/10W 2.7K	1	
R4080	ERJ3GEYJ101V	1/10W 100	1	
R4081	ERJ3GEYJ821V	1/10W 820	1	
R4088	ERJ3GEYJ272V	1/10W 2.7K	1	
R4089	ERJ3GEYJ272V	1/10W 2.7K	1	
R4090	ERJ3GEYJ121V	1/10W 120	1	
R4093	ERJ3GEYJ121V	1/10W 120	1	
R4094	ERJ3GEYJ223V	1/10W 22K	1	
R7304	ERJ3GEYJ101V	1/10W 100	1	
R7307	ERJ3GEY0R00V	1/10W 0	1	
R7312	ERJ3GEYF221V	1/10W 220	1	
R7313	ERJ3GEYF221V	1/10W 220	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R7317	ERJ3GEY0R00V	1/10W 0	1	
R7319	ERJ3GEY0R00V	1/10W 0	1	
R7322	ERJ3GEY0R00V	1/10W 0	1	
R7324	ERJ3GEYJ221V	1/10W 220	1	
R7325	ERJ3GEYJ221V	1/10W 220	1	
R7326	ERJ3GEY0R00V	1/10W 0	1	
R7401	ERJ3GEYJ104V	1/10W 100K	1	
R7402	ERJ3GEYJ103V	1/10W 10K	1	
R7403	ERJ3GEYJ153V	1/10W 15K	1	
R7404	ERJ3GEYJ223V	1/10W 22K	1	
R7405	ERDS2TJ471T	1/4W 470	1	
R7406	ERJ3GEYJ474V	1/10W 470K	1	
R7407	ERJ3GEYJ103V	1/10W 10K	1	
R7408	ERJ3GEYJ153V	1/10W 15K	1	
R7409	ERJ3GEYJ101V	1/10W 100	1	
R7410	ERJ3GEYJ821V	1/10W 820	1	
R7411	ERJ3GEYJ472V	1/10W 4.7K	1	
R7412	ERJ3GEYJ472V	1/10W 4.7K	1	
R7414	ERJ3GEYJ472V	1/10W 4.7K	1	
R7444	ERJ3RED300V	1/16W 30	1	
R7445	ERJ3RBD682V	1/16W 6.8K	1	
R7446	ERJ3RBD202V	1/16W 2K	1	
R7448	ERJ3GEYJ182V	1/10W 1.8K	1	
R7501	ERJ3GEYJ102V	1/10W 1K	1	
R7502	ERJ3GEYJ392V	1/10W 3.9K	1	
R7503	ERJ3GEYJ104V	1/10W 100K	1	
R7504	ERJ3GEYJ102V	1/10W 1K	1	
R7505	ERJ3GEYF153V	1/10W 15K	1	
R7506	ERJ3GEYJ104V	1/10W 100K	1	
R7507	ERJ3GEYF152V	1/10W 1.5K	1	
R7508	ERJ3GEYF562V	1/10W 5.6K	1	
R7509	ERJ3GEYJ101V	1/10W 100	1	
R7510	ERJ3GEYJ101V	1/10W 100	1	
R7511	ERJ3GEYJ101V	1/10W 100	1	
R7512	ERJ3GEYJ101V	1/10W 100	1	
R7513	ERJ3GEYJ101V	1/10W 100	1	
R7514	ERJ3GEYJ101V	1/10W 100	1	
R7517	ERJ3GEYJ472V	1/10W 4.7K	1	
R7518	ERJ3RBD273V	1/16W 27K	1	
R7520	ERJ3GEYJ103V	1/10W 10K	1	
R7521	ERJ3GEYJ103V	1/10W 10K	1	
R7522	ERJ3GEYJ473V	1/10W 47K	1	
R7523	ERJ3GEY0R00V	1/10W 0	1	
R7524	ERJ3GEYJ101V	1/10W 100	1	
R7525	ERJ3GEY0R00V	1/10W 0	1	
R7526	ERJ3GEY0R00V	1/10W 0	1	
R7527	ERJ3GEYJ101V	1/10W 100	1	
R7528	ERJ3GEYJ101V	1/10W 100	1	
R7529	ERJ3GEYJ101V	1/10W 100	1	
R7530	ERJ3GEYJ223V	1/10W 22K	1	
R7531	ERJ3GEYJ104V	1/10W 100K	1	
R7532	ERJ3GEYJ332V	1/10W 3.3K	1	
R7533	ERJ3GEY0R00V	1/10W 0	1	
R7534	ERJ3GEYJ103V	1/10W 10K	1	
R7535	ERJ3GEYJ101V	1/10W 100	1	
R7536	ERJ3GEYJ101V	1/10W 100	1	
R7537	ERJ3GEYJ101V	1/10W 100	1	
R7539	ERJ3GEYJ472V	1/10W 4.7K	1	
R7540	ERJ3GEYJ103V	1/10W 10K	1	
R7543	ERJ3GEYJ101V	1/10W 100	1	
R7544	ERJ3GEYJ101V	1/10W 100	1	
R7548	ERJ3GEYJ472V	1/10W 4.7K	1	
R7549	ERJ3GEYJ472V	1/10W 4.7K	1	
R7558	ERJ3GEYJ202V	1/10W 2K	1	
R7559	ERJ3GEYJ202V	1/10W 2K	1	
R7561	ERJ3GEYJ101V	1/10W 100	1	
R7562	ERJ3GEYJ101V	1/10W 100	1	
R7564	ERJ3GEYJ101V	1/10W 100	1	
R7565	ERJ3GEYJ101V	1/10W 100	1	
R7566	ERJ3GEYJ101V	1/10W 100	1	
R7567	ERJ3GEYJ101V	1/10W 100	1	
R7568	ERJ3GEYJ101V	1/10W 100	1	
R7570	ERJ3GEYJ392V	1/10W 3.9K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R7571	ERJ3GEYJ101V	1/10W 100	1	
R7572	ERJ3GEYJ101V	1/10W 100	1	
R7574	ERJ3GEYJ223V	1/10W 22K	1	
R7575	ERJ3GEYJ101V	1/10W 100	1	
R7576	ERJ3GEYJ102V	1/10W 1K	1	
R7577	ERJ3GEYJ103V	1/10W 10K	1	
R7579	ERJ3GEYJ223V	1/10W 22K	1	
R7582	ERJ3GEYJ104V	1/10W 100K	1	
R7583	ERJ3GEYJ472V	1/10W 4.7K	1	
R7584	ERJ3GEYJ473V	1/10W 47K	1	
R7585	ERJ3GEYJ225V	1/10W 2.2M	1	
R7586	ERJ3GEYJ273V	1/10W 27K	1	
R7587	ERJ3GEYJ224V	1/10W 220K	1	
R7588	ERJ3GEYJ104V	1/10W 100K	1	
R7589	ERJ3GEYJ221V	1/10W 220	1	
R7590	ERJ3GEYJ104V	1/10W 100K	1	
R7597	ERJ3GEYJ822V	1/10W 8.2K	1	
R7598	ERJ3GEYJ822V	1/10W 8.2K	1	
R7599	ERJ3GEYJ822V	1/10W 8.2K	1	
R7600	ERJ3GEYJ103V	1/10W 10K	1	
R7601	ERJ3GEYJ102V	1/10W 1K	1	
R7606	ERJ3GEYF393V	1/10W 39K	1	
R7607	ERJ3GEYJ101V	1/10W 100	1	
R7608	ERJ3GEYF433V	1/10W 43K	1	
R7612	ERJ3GEYJ562V	1/10W 5.6K	1	
R7614	ERJ3GEYJ470V	1/10W 47	1	
R7615	ERJ3GEYJ473V	1/10W 47K	1	
R7616	ERJ3GEYJ473V	1/10W 47K	1	
R7617	ERDS2TJ271T	1/4W 270	1	
R7619	ERJ3GEYJ103V	1/10W 10K	1	
R7621	ERJ3GEYJ104V	1/10W 100K	1	
R7623	ERJ3GEYJ181V	1/10W 180	1	
R7624	ERJ3GEYJ103V	1/10W 10K	1	
R7625	ERJ3GEYJ103V	1/10W 10K	1	
R7626	ERJ3GEYJ821V	1/10W 820	1	
R7627	ERJ3GEYJ303V	1/10W 30K	1	
R7639	ERJ3GEYJ272V	1/10W 2.7K	1	
R7640	ERJ3GEYJ272V	1/10W 2.7K	1	
R7641	ERJ3GEYJ272V	1/10W 2.7K	1	EE
R7642	ERJ3GEYJ562V	1/10W 5.6K	1	
R7643	ERJ3GEYJ163V	1/10W 16K	1	
R7644	ERJ3GEYJ562V	1/10W 5.6K	1	
R7648	ERDS2TJ470T	1/4W 47	1	
R7651	ERJ3GEYJ472V	1/10W 4.7K	1	
R7653	ERJ3GEYJ101V	1/10W 100	1	
R7655	ERJ3GEYJ101V	1/10W 100	1	
S7501	EVQ11A04M	SWITCH,EXT LINK	1	EE
S7502	EVQ11A04M	SWITCH,CH DOWN	1	
S7503	EVQ11A04M	SWITCH,CH UP	1	
S7504	EVQ11A04M	SWITCH,OPEN/CLOSE	1	
S7505	EVQ11A04M	SWITCH,SELECT	1	
S7506	EVQ11A04M	SWITCH,STOP	1	
S7507	EVQ11A04M	SWITCH,PLAY	1	
S7508	EVQ11A04M	SWITCH,REC	1	
T7501	G4D1A0000117	TRANSFORMER	1	
W501	ERJ3GEY0R00V	1/10W 0	1	
W502	ERJ3GEY0R00V	1/10W 0	1	
W503	ERJ3GEY0R00V	1/10W 0	1	
W504	ERJ3GEY0R00V	1/10W 0	1	
W505	ERJ3GEY0R00V	1/10W 0	1	
W506	ERJ3GEY0R00V	1/10W 0	1	
W507	ERJ3GEY0R00V	1/10W 0	1	
W508	ERJ3GEY0R00V	1/10W 0	1	
W509	ERJ3GEY0R00V	1/10W 0	1	
W510	ERJ3GEY0R00V	1/10W 0	1	
W511	ERJ3GEY0R00V	1/10W 0	1	
W512	ERJ3GEY0R00V	1/10W 0	1	
W513	ERJ3GEY0R00V	1/10W 0	1	
W514	ERJ3GEY0R00V	1/10W 0	1	
W515	ERJ3GEY0R00V	1/10W 0	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
W516	ERJ3GEY0R00V	1/10W 0	1	
W517	ERJ3GEY0R00V	1/10W 0	1	
W518	ERJ3GEY0R00V	1/10W 0	1	
W519	ERJ3GEY0R00V	1/10W 0	1	
W520	ERJ3GEY0R00V	1/10W 0	1	
W521	ERJ3GEY0R00V	1/10W 0	1	
W522	ERJ3GEY0R00V	1/10W 0	1	
W523	ERJ3GEY0R00V	1/10W 0	1	
W524	ERJ3GEY0R00V	1/10W 0	1	
W525	ERJ3GEY0R00V	1/10W 0	1	
W527	ERJ3GEY0R00V	1/10W 0	1	
W528	ERJ3GEY0R00V	1/10W 0	1	
W529	ERJ6GEY0R00V	1/8W 0	1	
W530	ERJ6GEY0R00V	1/8W 0	1	
W531	ERJ6GEY0R00V	1/8W 0	1	
W532	ERJ6GEY0R00V	1/8W 0	1	
W533	ERJ6GEY0R00V	1/8W 0	1	
W534	ERJ3GEY0R00V	1/10W 0	1	
W535	ERJ3GEY0R00V	1/10W 0	1	
W536	ERJ3GEY0R00V	1/10W 0	1	
W537	ERJ3GEY0R00V	1/10W 0	1	
W538	ERJ3GEY0R00V	1/10W 0	1	
X7301	H0D245500016	CRYSTAL OSCILLATOR	1	
X7501	H0D100500018	CRYSTAL OSCILLATOR	1	
X7502	H0A327200108	CRYSTAL OSCILLATOR	1	
■	VEP07A91D	TUNER P.C.B.		(RTL)
C7809	ECJ1VB1H103K	50V 0.01U	1	
C7813	F2A0J470A599	6.3V 47U	1	
C7814	F2A1H2200032	50V 22U	1	
C7817	F2A0J470A599	6.3V 47U	1	
C7818	ECJ1VC1H330J	50V 33P	1	
C7819	ECJ1VC1H330J	50V 33P	1	
C7820	ECJ1VB1C104K	16V 0.1U	1	
C7821	ECJ1VB1H103K	50V 0.01U	1	
C7822	ECJ1VB1H103K	50V 0.01U	1	
C7824	F2A0J470A599	6.3V 47U	1	
C7825	ECJ1VC1H101J	50V 100P	1	
C7828	ECJ1VB1H103K	50V 0.01U	1	
D7802	B0BA03000015	DIODE	1	
K7808	ERJ3GEY0R00V	1/10W 0	1	
K7810	ERJ3GEY0R00V	1/10W 0	1	
LB7802	J0JHC0000032	COIL	1	
LB7803	J0JHC0000032	COIL	1	
LB7804	J0JHC0000032	COIL	1	
PS7801	K1KB18B00012	CONNECTOR(18P)	1	
Q7802	2SB1218A0L	TRANSISTOR	1	
R7811	ERDS2TJ102T	1/4W 1K	1	
R7812	ERJ6GEYJ681V	1/8W 680	1	
R7815	ERJ3GEYJ471V	1/10W 470	1	
R7816	ERJ3GEYJ471V	1/10W 470	1	
R7818	ERJ3GEYJ221V	1/10W 220	1	
R7820	ERJ3GEYJ102V	1/10W 1K	1	
R7844	ERJ6GEYJ681V	1/8W 680	1	
TU7801	ENGF7502GF	TUNER	1	
W501	ERJ6GEY0R00V	1/8W 0	1	
W502	ERJ3GEY0R00V	1/10W 0	1	
W503	ERJ6GEY0R00V	1/8W 0	1	
W504	ERJ6GEY0R00V	1/8W 0	1	
W505	ERJ6GEY0R00V	1/8W 0	1	
W506	ERJ3GEY0R00V	1/10W 0	1	
W507	ERJ3GEY0R00V	1/10W 0	1	
W508	ERJ6GEY0R00V	1/8W 0	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
W509	ERJ3GEY0R00V	1/10W 0	1	
W510	ERJ3GEY0R00V	1/10W 0	1	
W511	ERJ3GEY0R00V	1/10W 0	1	
W512	ERJ3GEY0R00V	1/10W 0	1	
W513	ERJ3GEY0R00V	1/10W 0	1	
W514	ERJ6GEY0R00V	1/8W 0	1	
W515	ERJ3GEY0R00V	1/10W 0	1	
W516	ERJ3GEY0R00V	1/10W 0	1	
W517	ERJ8GEY0R00V	1/4W 0	1	
W518	ERJ6GEY0R00V	1/8W 0	1	
W519	ERJ3GEY0R00V	1/10W 0	1	
W520	ERJ3GEY0R00V	1/10W 0	1	
W521	ERJ8GEY0R00V	1/4W 0	1	
W523	ERJ6GEY0R00V	1/8W 0	1	
W524	ERJ3GEY0R00V	1/10W 0	1	
W525	ERJ3GEY0R00V	1/10W 0	1	
W526	ERJ3GEY0R00V	1/10W 0	1	
W527	ERJ3GEY0R00V	1/10W 0	1	
W529	ERJ3GEY0R00V	1/10W 0	1	
W530	ERJ6GEY0R00V	1/8W 0	1	
W531	ERJ6GEY0R00V	1/8W 0	1	
W532	ERJ6GEY0R00V	1/8W 0	1	
W533	ERJ6GEY0R00V	1/8W 0	1	
W534	ERJ6GEY0R00V	1/8W 0	1	
W535	ERJ3GEY0R00V	1/10W 0	1	
W536	ERJ3GEY0R00V	1/10W 0	1	
W537	ERJ6GEY0R00V	1/8W 0	1	
W538	ERJ6GEY0R00V	1/8W 0	1	
W539	ERJ6GEY0R00V	1/8W 0	1	
W540	ERJ6GEY0R00V	1/8W 0	1	
W541	ERJ6GEY0R00V	1/8W 0	1	
W542	ERJ6GEY0R00V	1/8W 0	1	
W543	ERJ3GEY0R00V	1/10W 0	1	
W544	ERJ3GEY0R00V	1/10W 0	1	
W545	ERJ6GEY0R00V	1/8W 0	1	
W546	ERJ6GEY0R00V	1/8W 0	1	
W547	ERJ3GEY0R00V	1/10W 0	1	
W548	ERJ3GEY0R00V	1/10W 0	1	
W549	ERJ3GEY0R00V	1/10W 0	1	
W550	ERJ3GEY0R00V	1/10W 0	1	
■	VEP70161A	FRONT(L) P.C.B.		(RTL)
S7002	EVQ11A04M	SWITCH,POWER	1	
■	VEP71110A	POWER SUPPLY P.C.B.		(RTL)
C1120	ECQU2A683MLC	100V 0.068U	1	
C1121	ECQU2A223MLC	100V 0.022U	1	
C1122	ECKWNA102MEV	250V 1000P	1	
C1123	ECKWNA102MEV	250V 1000P	1	
C1125	ECKWNA102MEV	250V 1000P	1	
C1143	F2B2W4700003	450V 47U	1	
C1150	F2A1V6800002	35V 68P	1	
C1151	F1B3D102A011	2V 1000P	1	
C1152	ECJ2VC1H331J	50V 330P	1	
C1153	ECJGVB1H222K	50V 2200P	1	
C1154	ECJGVB1H102K	50V 1000P	1	
C1200	ECJ2VB1E104K	25V 0.1U	1	
C1201	ECJ2VB1E473K	25V 0.047U	1	
C1270	F2A1C1820005	16V 1800P	1	
C1271	F2A1C1820005	16V 1800P	1	
C1272	F2A1C8210008	16V 820P	1	
C1601	F2A1E2210050	25V 220U	1	
C1602	ECJ2VB1E104K	25V 0.1U	1	
C1603	ECJ2VB1E104K	25V 0.1U	1	
C1604	ECJ2FB1C474K	16V 0.47U	1	
C1605	ECJ2VC1H181J	50V 180P	1	
C1606	ECJGVB1H103K	50V 0.01U	1	
C1607	F2A1A6810022	10V 680P	1	
C1608	ECJ2VB1E104K	25V 0.1U	1	
C1701	F2A1E2210050	25V 220U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C1702	ECJ1VB1C104K	16V 0.1U	1	
C1703	ECJ1VB1C104K	16V 0.1U	1	
C1704	ECJ1VB1C104K	16V 0.1U	1	
C1705	ECJ1VC1H181J	50V 180P	1	
C1706	ECJ1VB1H103K	50V 0.01U	1	
C1707	F2A0J6810007	6.3V 680P	1	
C1800	F2A1E4700048	25V 47U	1	
D1140	B0EDKT000009	DIODE	1	
D1151	B0HAGM000006	DIODE	1	
D1152	MAZ4100NMF	DIODE	1	
D1155	MAZ73000BC	DIODE	1	
D1156	MA2C165001VT	DIODE	1	
D1157	B0HADV000001	DIODE	1	
D1270	B0JBSG000010	DIODE	1	
D1601	B0JCPD000021	DIODE	1	
D1701	B0JCPD000021	DIODE	1	
D1800	MA2J11100L	DIODE	1	
F1101	K5D202BK0005	FUSE	1	⚠
IC1150	C0DACZH00017	IC	1	
IC1200	C0DAEMB00003	IC	1	
IC1601	C0DBAZZ00132	IC	1	
IC1701	C0DBAZZ00132	IC	1	
IP1601	K5H3022A0013	IC PROTECTOR	1	
L1120	G0B233D00001	COIL	1	
L1121	G0B233D00001	COIL	1	
L1270	G0A100H00025	COIL 10UH	1	
L1400	G0A100HA0023	COIL 10UH	1	
L1601	G0A150ZA0041	COIL 15UH	1	
L1701	G0A220ZA0041	COIL 22UH	1	
LB1126	ERJ6GEY0R00V	1/8W 0	1	
LB1600	J0JHC0000048	FILTER	1	
LB1700	J0JHC0000048	FILTER	1	
P1101	K2AA2H000007	AC INLET	1	⚠
P1102	K1KB23A00004	CONNECTOR(23P)	1	
P1103	K1KA03AA0301	CONNECTOR(3P)	1	
Q1200	B3PBA0000402	PHOTO COUPLER	1	
Q1600	B1DHED000008	TRANSISTOR	1	
Q1700	B1DHDD000022	TRANSISTOR	1	
QR1800	UNR211300L	TRANSISTOR	1	
QR1801	UNR221300L	TRANSISTOR	1	
R1150	ERJ6GEYJ180V	1/8W 18	1	
R1151	ERJ6GEYJ682V	1/8W 6.8K	1	
R1152	ERJ6GEYJ103V	1/8W 10K	1	
R1153	ERJ6GEYJ180V	1/8W 18	1	
R1154	ERJ6GEYG912V	1/8W 9.1K	1	
R1155	ERJ6GEYG752V	1/8W 7.5K	1	
R1156	ERJ6GEYG163V	1/8W 16K	1	
R1157	ERJ6GEYG511V	1/8W 510	1	
R1158	ERX2SJR22E	2W 22	1	
R1200	ERJ6GEYG122V	1/8W 1.2K	1	
R1201	ERJ6GEYG822V	1/8W 8.2K	1	
R1205	ERJ6GEYJ224V	1/8W 220K	1	
R1206	ERJ6GEYG242V	1/8W 2.4K	1	
R1207	ERJ6GEYJ103V	1/8W 10K	1	
R1208	ERJ6GEYJ222V	1/8W 2.2K	1	
R1209	ERJ6GEYJ102V	1/8W 1K	1	
R1210	ERJ6GEYJ102V	1/8W 1K	1	
R1601	D1BFR0240001	1/2W 0.024U	1	
R1602	ERJ6GEYJ513V	1/8W 51K	1	
R1603	ERJ6RBD202V	1/10W 2K	1	
R1604	ERJ6RBD822V	1/10W 8.2K	1	
R1605	ERJ6RBD272V	1/10W 2.7K	1	
R1701	D1BFR0240001	1/2W 0.024U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R1702	ERJ3GEYJ513V	1/10W 51K	1	
R1703	ERJ3GEY0R00V	1/10W 0	1	
R1704	ERJ3RBD123V	1/16W 12K	1	
R1705	ERJ3RBD562V	1/16W 5.6K	1	
R1800	ERJ6GEYJ471V	1/8W 470	1	
R1801	ERJ6GEYJ104V	1/8W 100K	1	
R1802	ERJ6GEYJ472V	1/8W 4.7K	1	
R1803	ERJ6GEYJ103V	1/8W 10K	1	
T1150	ETS28BF1W6AD	TRANSFORMER	1	⚠
VA1110	ERZVA5V471	SURGE ABSORBER	1	
ZA1103	EYF52BCY	FUSE HOLDER	1	
ZA1104	EYF52BCY	FUSE HOLDER	1	
■	VEP73136A	SD CARD P.C.B.		(RTL)
C6801	ECJ1VB1H103K	50V 0.01U	1	
C6802	F1H1A225A051	10V 22U	1	
LB6801	J0JHC0000032	COIL	1	
LB6802	J0JHC0000045	COIL	1	
P6801	K1NA09E00075	CONNECTOR(9P)	1	
P6802	K1MY20AA0021	CONNECTOR(20P)	1	
R6801	ERJ3GEYJ101V	1/10W 100	1	
R6802	ERJ3GEYJ220V	1/10W 22	1	
R6803	ERJ3GEYJ220V	1/10W 22	1	
R6804	ERJ3GEYJ223V	1/10W 22K	1	
R6805	ERJ3GEYJ123V	1/10W 12K	1	
R6807	ERJ3GEYJ223V	1/10W 22K	1	
RX6801	EXB38V220JV	RESISTOR-RESISTOR	1	
RX6802	EXB38V123JV	RESISTOR-RESISTOR	1	
■	VEP73137A	HDMI P.C.B.		(RTL)
C56001	ECJ0EC1H221J	50V 220P	1	
C56101	ECJ0EB1A104K	10V 0.1U	1	
C56102	ECJ0EB1A104K	10V 0.1U	1	
C56103	ECJ0EB1A104K	10V 0.1U	1	
C56104	ECJ0EB1A104K	10V 0.1U	1	
C56105	ECJ0EB1A104K	10V 0.1U	1	
C56106	ECJ0EB1A104K	10V 0.1U	1	
C56107	ECJ0EB1A104K	10V 0.1U	1	
C56108	ECJ0EB1A104K	10V 0.1U	1	
C56109	ECJ0EB1A104K	10V 0.1U	1	
C56110	ECJ0EB1A104K	10V 0.1U	1	
C56111	ECJ0EB1A104K	10V 0.1U	1	
C56112	ECJ0EB1A104K	10V 0.1U	1	
C56113	ECJ0EB1A104K	10V 0.1U	1	
C56114	ECJ0EB1A104K	10V 0.1U	1	
C56115	ECJ0EB1A104K	10V 0.1U	1	
C56116	ECJ0EB1A104K	10V 0.1U	1	
C56117	ECJ0EB1A104K	10V 0.1U	1	
C56118	ECJ0EB1A104K	10V 0.1U	1	
C56119	ECJ0EB1A104K	10V 0.1U	1	
C56120	ECJ0EB1A104K	10V 0.1U	1	
C56121	ECJ0EB1A104K	10V 0.1U	1	
C56122	ECJ0EB1A104K	10V 0.1U	1	
C56123	ECJ0EB1A104K	10V 0.1U	1	
C56124	ECJ0EB1A104K	10V 0.1U	1	
C56125	ECJ0EB1A104K	10V 0.1U	1	
C56126	ECJ0EB1A104K	10V 0.1U	1	
C56127	ECJ0EB1A104K	10V 0.1U	1	
C56128	ECJ0EB1A104K	10V 0.1U	1	
C56129	ECJ0EC1H221J	50V 220P	1	
C56130	ECJ1VB0J105K	6.3V 1U	1	
C56131	F1J0J106A014	6.3V 10U	1	
C56132	ECJ0EB1C103K	16V 0.01U	1	
C56133	F1H1A105A028	10V 1U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C56134	F1H1A105A028	10V 1U	1	
C56135	ECJ0EB1A104K	10V 0.1U	1	
C56140	ECJ0EB1A104K	10V 0.1U	1	
D56101	MA2J72800L	DIODE	1	
FL56101	F1H0J1050025	FILTER	1	
FL56102	F1H0J1050025	FILTER	1	
FL56103	F1H0J1050025	FILTER	1	
FL56104	F1H0J1050025	FILTER	1	
FL56105	F1H0J1050025	FILTER	1	
FL56106	F1H0J1050025	FILTER	1	
FL56110	F1H0J1050025	FILTER	1	
FP56101	K1MN40AA0082	CONNECTOR(40P)	1	
IC56101	C0JBAZ002116	IC	1	
IC56102	C0JBAZ002116	IC	1	
IC56103	MN864701	IC	1	
IC56104	C0CBCBD00048	IC	1	
IC56105	C0CBCDC00052	IC	1	
IC56107	C0JBAB000604	IC	1	
L56101	J0MAB0000170	COIL	1	
L56102	J0MAB0000170	COIL	1	
L56103	J0MAB0000170	COIL	1	
L56104	J0MAB0000170	COIL	1	
LB56101	J0JHC0000032	COIL	1	
LB56102	J0JHC0000032	COIL	1	
LB56103	J0JHC0000032	COIL	1	
LB56104	J0JCC0000119	COIL	1	
LB56105	J0JCC0000119	COIL	1	
LB56106	J0JCC0000119	COIL	1	
LB56107	J0JCC0000119	COIL	1	
LB56108	J0JHC0000032	COIL	1	
LB56109	J0JHC0000032	COIL	1	
LB56110	J0JHC0000032	COIL	1	
LB56111	J0JHC0000032	COIL	1	
LB56112	J0JHC0000032	COIL	1	
LB56115	J0JHC0000032	COIL	1	
LB56116	J0JHC0000032	COIL	1	
P56101	K1KY10BA0033	CONNECTOR(10P)	1	
P56102	K1FA119E0002	CONNECTOR(119P)	1	
Q56001	2SD1819A0L	TRANSISTOR	1	
Q56002	2SD1819A0L	TRANSISTOR	1	
Q56101	2SD1819A0L	TRANSISTOR	1	
Q56102	B1CFHA000002	TRANSISTOR	1	
Q56103	B1CFHA000002	TRANSISTOR	1	
Q56104	2SD1819A0L	TRANSISTOR	1	
Q56105	2SD1819A0L	TRANSISTOR	1	
R56001	ERJ2GEJ472X	1/16W 4.7K	1	
R56002	ERJ2GEJ473X	1/16W 47K	1	
R56003	ERJ2GEJ225X	1/16W 2200K	1	
R56004	ERJ2GEJ104X	1/16W 100K	1	
R56101	ERJ2GEJ220X	1/16W 22	1	
R56102	ERJ2GEJ330X	1/16W 33	1	
R56103	ERJ2GEJ330X	1/16W 33	1	
R56104	ERJ2GEJ330X	1/16W 33	1	
R56105	ERJ2GEJ330X	1/16W 33	1	
R56106	ERJ2GEJ820X	1/16W 82	1	
R56107	ERJ2GEJ330X	1/16W 33	1	
R56108	ERJ2GEJ330X	1/16W 33	1	
R56109	ERJ2GEJ121X	1/16W 120	1	
R56110	ERJ2GEJ330X	1/16W 33	1	
R56111	ERJ2GEJ330X	1/16W 33	1	
R56112	ERJ2GEJ330X	1/16W 33	1	
R56114	ERJ2GEJ330X	1/16W 33	1	
R56115	ERJ2GEJ820X	1/16W 82	1	
R56116	ERJ2GEJ101X	1/16W 100	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R56117	ERJ2GEJ151X	1/16W 150	1	
R56118	ERJ2GEJ820X	1/16W 82	1	
R56119	ERJ2GEJ330X	1/16W 33	1	
R56120	ERJ2GEJ151X	1/16W 150	1	
R56121	ERJ2GEJ151X	1/16W 150	1	
R56122	ERJ2GEJ151X	1/16W 150	1	
R56123	ERJ2GEJ511X	1/16W 510	1	
R56124	ERJ2GEJ103X	1/16W 10K	1	
R56125	ERJ2GEJ202X	1/16W 2K	1	
R56126	ERJ2GEJ202X	1/16W 2K	1	
R56127	ERJ2GEJ103X	1/16W 10K	1	
R56128	ERJ2GEJ202X	1/16W 2K	1	
R56129	ERJ2GEJ202X	1/16W 2K	1	
R56130	ERJ2GEJ273X	1/16W 27K	1	
R56131	ERJ2GEJ221X	1/16W 220	1	
R56132	ERJ2GEJ224X	1/16W 220K	1	
R56133	ERJ2GEJ104X	1/16W 100K	1	
R56134	ERJ2GEJ470X	1/16W 47	1	
R56135	ERJ2GEJ470X	1/16W 47	1	
R56137	ERJ2GE0R00X	1/16W 0	1	
R56138	ERJ2GE0R00X	1/16W 0	1	
R56139	ERJ2GEJ820X	1/16W 82	1	
R56140	ERJ2GEJ8R2X	1/16W 8.2	1	
R56142	ERJ2GEJ330X	1/16W 33	1	
R56143	ERJ2GEJ330X	1/16W 33	1	
R56144	ERJ2GEJ8R2X	1/16W 8.2	1	
R56145	ERJ2GEJ8R2X	1/16W 8.2	1	
R56146	ERJ2GEJ8R2X	1/16W 8.2	1	
R56147	ERJ2GEJ8R2X	1/16W 8.2	1	
R56148	ERJ2GEJ8R2X	1/16W 8.2	1	
R56149	ERJ2GEJ8R2X	1/16W 8.2	1	
R56150	ERJ2GEJ8R2X	1/16W 8.2	1	
R56151	ERJ2GEJ820X	1/16W 82	1	
R56152	ERJ2GEJ820X	1/16W 82	1	
R56153	ERJ2GEJ820X	1/16W 82	1	
R56154	ERJ2GEJ820X	1/16W 82	1	
R56155	ERJ2GEJ820X	1/16W 82	1	
R56156	ERJ2GEJ820X	1/16W 82	1	
R56157	ERJ2GEJ820X	1/16W 82	1	
R56158	ERJ2GEJ152X	1/16W 1.5K	1	
R56159	ERJ2GEJ332X	1/16W 3.3K	1	
R56160	ERJ2GEJ223X	1/16W 22K	1	
R56161	ERJ2GEJ470X	1/16W 47	1	
RX56101	D1H83304A024	RESISTOR-RESISTOR	1	
RX56102	D1H83304A024	RESISTOR-RESISTOR	1	
VA56101	D4ED13900002	VARISTOR	1	
VA56102	D4ED13900002	VARISTOR	1	
VA56103	EZJZ0V800AA	VERIABLE RESISTOR	1	
VA56104	D4ED13900002	VARISTOR	1	
VA56105	EZJZ0V800AA	VERIABLE RESISTOR	1	
VA56106	D4ED13900002	VARISTOR	1	
VA56107	EZJZ0V800AA	VERIABLE RESISTOR	1	
VA56108	D4ED13900002	VARISTOR	1	
VA56109	EZJZ0V800AA	VERIABLE RESISTOR	1	
VA56110	D4ED13900002	VARISTOR	1	
VA56111	EZJZ0V800AA	VERIABLE RESISTOR	1	
VA56112	D4ED13900002	VARISTOR	1	
VA56113	D4ED13900002	VARISTOR	1	
■	VEP73135A	DV JACK P.C.B.		(RTL)
P37001	K1KA06B00181	CONNECTOR(6P)	1	
P37002	K2HZ104B0012	CONNECTOR(104P)	1	
■		CASING/ACCESSORY/PACKING		
1	VEP70161A	FRONT(L) P.C.B.	1	(RTL)
2	VEP73135A	DV JACK P.C.B.	1	(RTL)
3	RFKB79119MT	MAIN P.C.B.	1	EE
3	RFKB79119NT	MAIN P.C.B.	1	GC,GCS,GN

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
5	RGR0365C-D1	REAR PANEL	1	EE ⚠
5	RGR0365C-G1	REAR PANEL	1	GC ⚠
5	RGR0365C-F1	REAR PANEL	1	GCS ⚠
5	RGR0365C-E1	REAR PANEL	1	GN ⚠
6	RHD30111-3J	SCREW	20	
7	RHD30119-L	SCREW	16	
8	RMA1979A	DIGITAL ANGLE A	1	
9	RFKNEH65EE	RAM/DIGITAL P.C.B. MODULE	1	EE
9	RFKNEH65GC	RAM/DIGITAL P.C.B. MODULE	1	GC
9	RFKNEH65GCS	RAM/DIGITAL P.C.B. MODULE	1	GCS
9	RFKNEH65GN	RAM/DIGITAL P.C.B. MODULE	1	GN
10	RMQ1513	HEAT TRANSFER SHEET	1	
11	L6FAJDAE0001	FAN MOTOR	1	
12	RKA0186-K	FOOT RUBBER	4	
13	RMC0672	PLATE SPRING	1	
14	RMY0357	HEAT SINK	1	
15	RHD32001	SCREW	4	
16	VKC0295	NYLON RIVET	2	
17	RMQ1514	HEAT TRANSFER SHEET D	1	
18	RYP1320A-S	FRONT PANEL ASS'Y 1	1	EE
18	RYP1320C-S	FRONT PANEL ASS'Y 1	1	GC,GCS
18	RYP1320B-S	FRONT PANEL ASS'Y 1	1	GN
18-1	RGK1968C-Q	FL ORNAMENT	1	
18-2	RGK1971A-S	REC BUTTON RING	1	
18-3	RYF0798K-S	PANEL DOOR ASS'Y	1	
18-4	RKF0751C-K	TRAY DOOR	1	
18-5	VMB3410	BLINDER SPRING	1	
18-6	RHD26045	SCREW	2	
18-7	RKF0754-K	SD BLINDER	1	
18-8	RMB0841-1	SD LID SPRING	1	
18-9	RMR1767-K	SD CHASSIS	1	
19	RHD30113	SCREW	2	
20	RFKV0071HDK	HDD 250GB	1	
21	RKM0552A-S	TOP CASE	1	⚠
22	RMN0841	HDD BRACKET	1	
23	RMC0625	TUNER END	2	
24	RKA0184-K	LEG SHEET	1	
25	VEK0J99	HDD POWER CABLE	1	
26	VEP73137A	HDMI P.C.B.	1	(RTL)
28	VEP71110A	POWER SUPPLY P.C.B.	1	(RTL)
29	VEP07A91D	TUNER P.C.B.	1	(RTL)
30	XSN3+4FJ	SCREW	2	
31	RMQ1551	GASKET A	1	
32	VMX1336	MINI CARD SPACER	1	
33	VEK0K02	FFC(40P)	1	
34	VEP73136A	SD CARD P.C.B.	1	(RTL)
36	VEK0K01	FFC(20P)	1	
37	N5EZZ0000003	HDD CONNECTOR	1	
39	RMR1766-K	SD CARD HOLDER ASS'Y	1	
40	XTN2+8GFJ	SCREW	2	
41	RMV0312	SHEET COVER	1	
44	VEK0K15	FFC(40P)	1	
46	VMC1534	EARTH SPRING	2	
47	XYN3+J8FJ	SCREW	2	
A1	EUR7659YC0	REMOTE CONTROL ASS'Y	1	EE
A1	EUR7659YE0	REMOTE CONTROL ASS'Y	1	GC,GCS
A1	EUR7659YD0	REMOTE CONTROL ASS'Y	1	GN
A1-1	UR76EC5903A	BATTERY COVER	1	
A2	K2CR2DA00004	AC CORD	1	EE,GC,GCS ⚠
A2	K2CT3CA00004	AC CORD	1	GC ⚠
A2	K2CJ2DA00008	AC CORD	1	GN ⚠

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
A3	K2KA6BA00003	AV CORD	1	
A4	K1TWACC00001	RF COAXIAL CABLE	2	
A6	RQCA1497	SET-UP GUIDE	1	GN
A8	RPQF0254	ACCESSORY BOX	1	
A9	RPFC0031-B	POLYETHYLENE BAG	1	
A10	RQT8380-L	OPERATING INSTRUCTIONS	1	(IA)GC,GCS,GN ⚠
A10	RQT8381-K	OPERATING INSTRUCTIONS	1	(IB)GCS ⚠
A10	RQT8382-A	OPERATING INSTRUCTIONS	1	(IC)GC ⚠
A10	RQT8459-R	OPERATING INSTRUCTIONS	1	(ID)EE ⚠
A10	RQT8460-Z	OPERATING INSTRUCTIONS	1	(IE)EE ⚠
A11	RQCC2704	DVD MEDIA SHEET	1	EE
A11	RQCC2705	DVD MEDIA SHEET	1	GC,GCS,GN
PC1	RPG7869	PACKING CASE	1	EE
PC1	RPG7872	PACKING CASE	1	GC
PC1	RPG7871	PACKING CASE	1	GCS
PC1	RPG7870	PACKING CASE	1	GN
PC2	RPN1859A-2	CUSHION (A)	1	
PC3	RPN1859B-2	CHSHION (B)	1	
PC4	RPFC0026-B	POLYETHYLENE BAG	1	
PC5	RPNC0138	CUSHION(C)	1	